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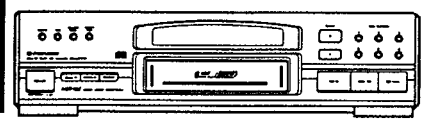
PIONEER®
The Art of Entertainment

Service Manual



● PD-J900M TYPE

ORDER NO.
ARP2391

MULTI – PLAY COMPACT DISC PLAYER

PD-J900M
PD-J800M

PD-J900M AND PD-J800M HAVE THE FOLLOWING:

Type	Model		Power Requirement	Remarks
	PD-J900M	PD-J800M		
HEMXJS	○	○	AC220-230V, 240V (switchable) *	
HBXJS	○	○	AC220-230V, 240V (switchable) *	
SD	○	○	AC110V, 120-127V, 220V, 240V (switchable) *	

* : Change the connection of power transformer's primary wiring.

- **This manual is applicable to PD-J900M/HEMXJS, HBXJS, SD, PD-J800M/HEMXJS, HBXJS and SD types.**
- **For HEMXJS, HBXJS and SD types, refer to page 64.**
- **For the mechanism descriptions, refer to the PD-Z84M service guide (ARP2190).**
- **These products are a component of systems. For the system composition, refer to the system manuals.**
- **Each of these products do not function properly when independent; to avoid malfunctions, be sure to connect it to the prescribed system component(s), otherwise damage may result.**
- **Ce manuel pour le service comprend les explications de réglage en français.**
- **Este manual de servicio trata del método ajuste escrito en español.**

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4046
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1. SAFETY INFORMATION

(FOR EUROPEAN MODEL ONLY)

VARO!
AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.

ADVERSEL:
USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION UNDGÅ UDSAETTELSE FOR STRÅLING.

VARNING!
OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRAKTA EJ STRÅLEN.

LASER
Kuva 1
Lasersateilyn varoitusmerkki

WARNING!
DEVICE INCLUDES LASER DIODE WHICH EMITS INVISIBLE INFRARED RADIATION WHICH IS DANGEROUS TO EYES. THERE IS A WARNING SIGN ACCORDING TO PICTURE 1 INSIDE THE DEVICE CLOSE TO THE LASER DIODE.

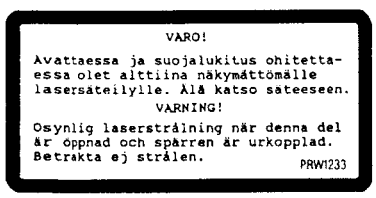
IMPORTANT
THIS PIONEER APPARATUS CONTAINS LASER OF CLASS 1.
SERVICING OPERATION OF THE APPARATUS SHOULD BE DONE BY A SPECIALLY INSTRUCTED PERSON.

LASER DIODE CHARACTERISTICS
MAXIMUM OUTPUT POWER: 5 mw
WAVELENGTH: 780-785 nm

LASER
Picture 1
Warning sign for laser radiation

LABEL CHECK (MULTI MAGAZINE type)

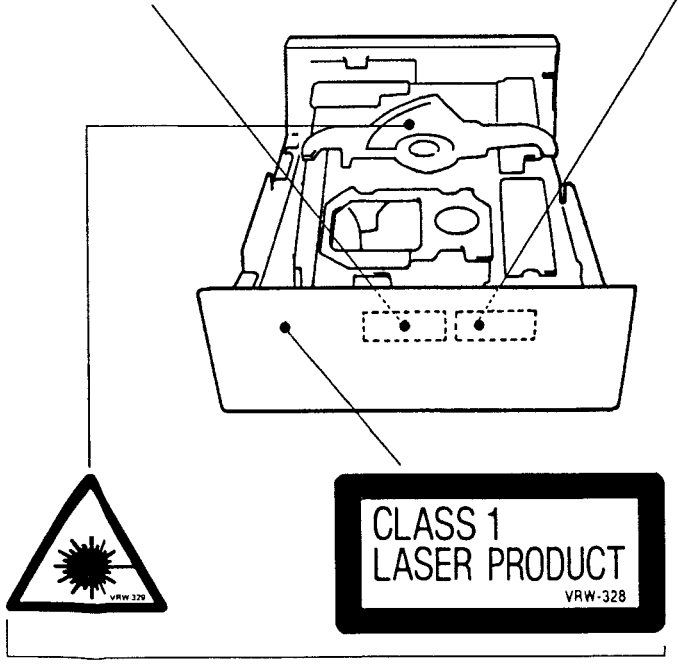
HEMXJS type


VARO!
Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen.
VARNING!
Osynlig laserstrålning när denna del är öppnad och spärren är urkopplad. Betrakta ej strålen.
PRW1233

HEMXJS and HBXJS types

ADVARSEL
USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHED SAFBRYDERE ER UDE AF FUNKTION.
UNDGÅ UDSÆTTELSE FOR STRÅLING.
VORSICHT!
UNSICHTBARE LASER-STRAHLUNG TRITT AUS, WENN DECKEL (ODER KLAPPE) GEÖFFNET IST! NICHT DEM STRAHL AUSSETZEN!
VRW1094

HBXJS type



HEMXJS and HBXJS types

Additional Laser Caution

1. Laser Interlock Mechanism
   The ON/OFF (ON : low level, OFF : high level) status of the LPS1 (S601) and LPS2 (S602) switches for detecting the loading state is detected by the system microprocessor, and the design prevents laser diode oscillation when both switches LPS1 and LPS2 are not ON (low level) (clamped state).
   Thus, interlock will no longer function if switches LPS1 (S601) and LPS2 (S602) are deliberately shorted.
   Also, in the test mode *, the interlock mechanism does not operate too.
   Laser diode oscillation will continue if pins 2 and 3 of CXA1471S (IC101) are connected to ground or pin 20 is connected to high level (ON) or the terminals of Q101 are shorted to each other (fault condition).

2. When the cover is opened with the servo mechanism block removed to be turned over, close viewing of the objective lens with the naked eye will cause exposure to a Class 1 laser beam.

*: Refer to page 26.

2. EXPLODED VIEWS, PACKING AND PARTS LIST

NOTES:
- *The parts with an encircled number are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

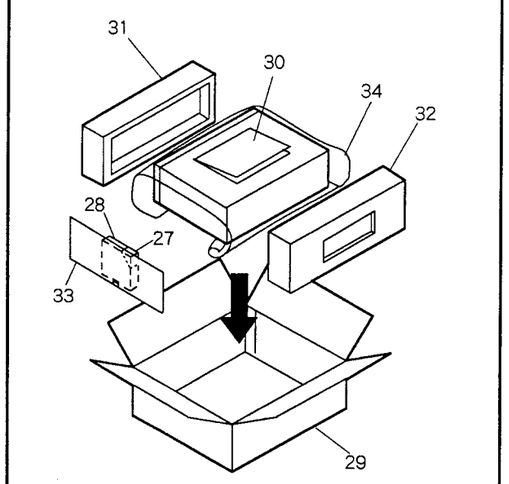
2.1 EXTERIOR AND PACKING

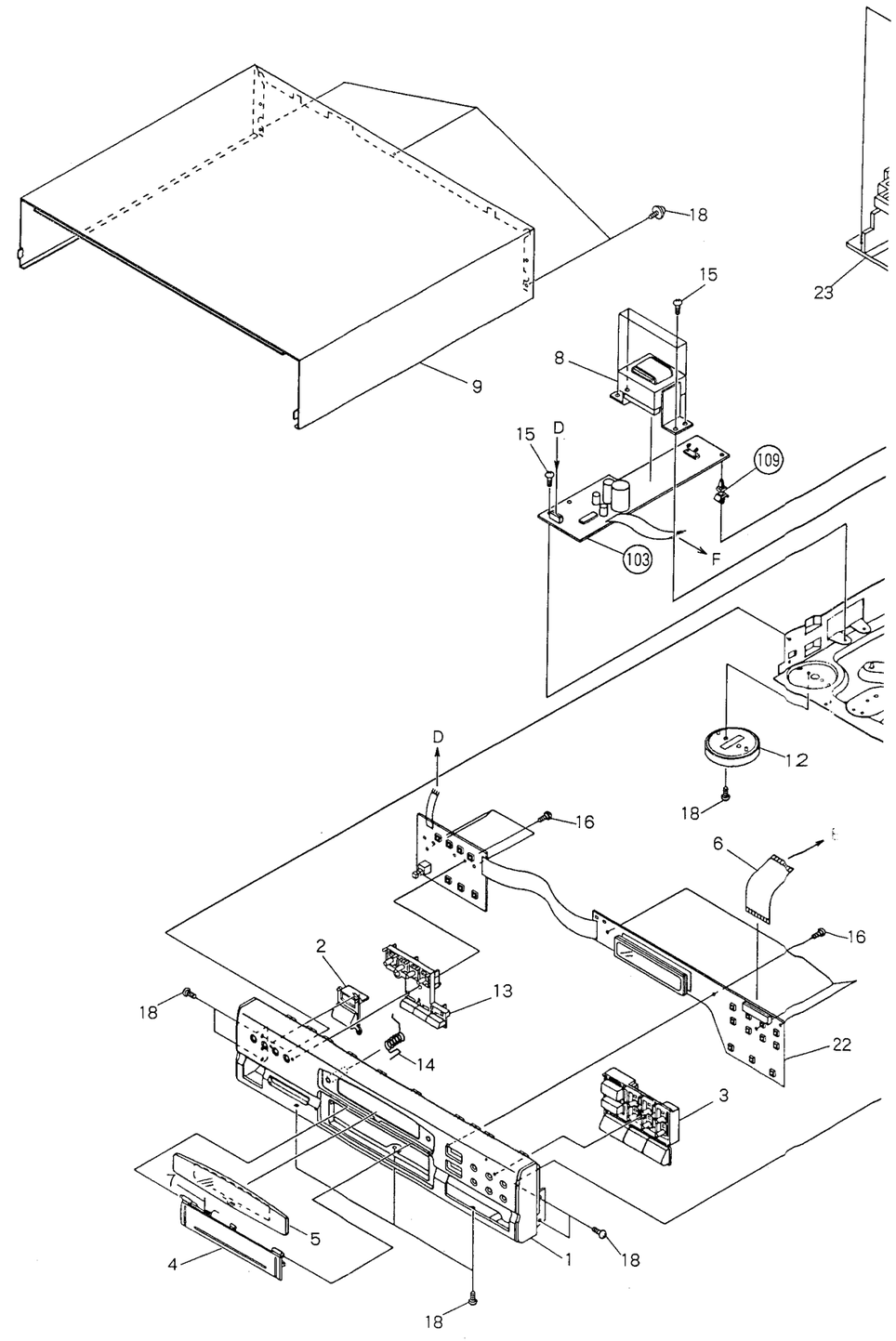
Parts List

Mark	No.	Description	Part No.
	1	Function panel	PNW2097
	2	Power button	PAC1630
	3	Function button	PAC1618
	4	Door	PNW2098
	5	FL panel	RAH1918
	6	22P F.F.C	PDD1114
	7	Door spring	PBH1022
⚠	8	Power transformer	PTT1172
	9	Bonnet	PYY1160
	10	Reg assembly	PXA1201
	11	Connection cable	PDE1107
	12	Reg assembly	RXA1448
	13	Mode button	PAC1654
	14	Earth spring	PBH1144
	15	Screw	BBZ30P060FCC
	16	Screw	PPZ30P120FMC
	17	Screw	BSZ30P070FMC
	18	Screw	BBZ30P080FCC
	19	Screw	PDZ30P050FMC
	20	• • • • •	
◉	21	Mother board assembly	PWM1642
◉	22	Function board assembly	PWZ2203
◉	23	Multi mechanism assembly	PXA1358
⚠	24	AC power cord	PDG1008
⚠	25	Strain relief	CM-22B
	26	Cord stopper	RNH-184
	27	Magazine assembly	PXA1308
	28	PP case (for Magazine assembly)	PYY1141
	29	CD packing case	PHG1832
	30	Operating instructions (English, French, Dutch, Italian, German, Swedish, Spanish, Portuguese)	PRE1152
	31	Protector F	PHA1180
	32	Protector R	PHA1181
	33	Magazine holder	PHC1064
	34	Mirror mat sheet	PHL1074

Mark	No.	Description	Part No.
	101	Under base	PNA1832
	102	Rear panel	PNA1721
	103	Power supply board assembly	PWZ2204
	104	Connector board assembly	PWZ2206
	105	Plate	PNM1158
	106	• • • • •	
	107	J angle	PNB1385
	108	JS angle	PNB1386
	109	PCB holder	PNW2100
	110	PCB holder	PNW2174

• PACKING





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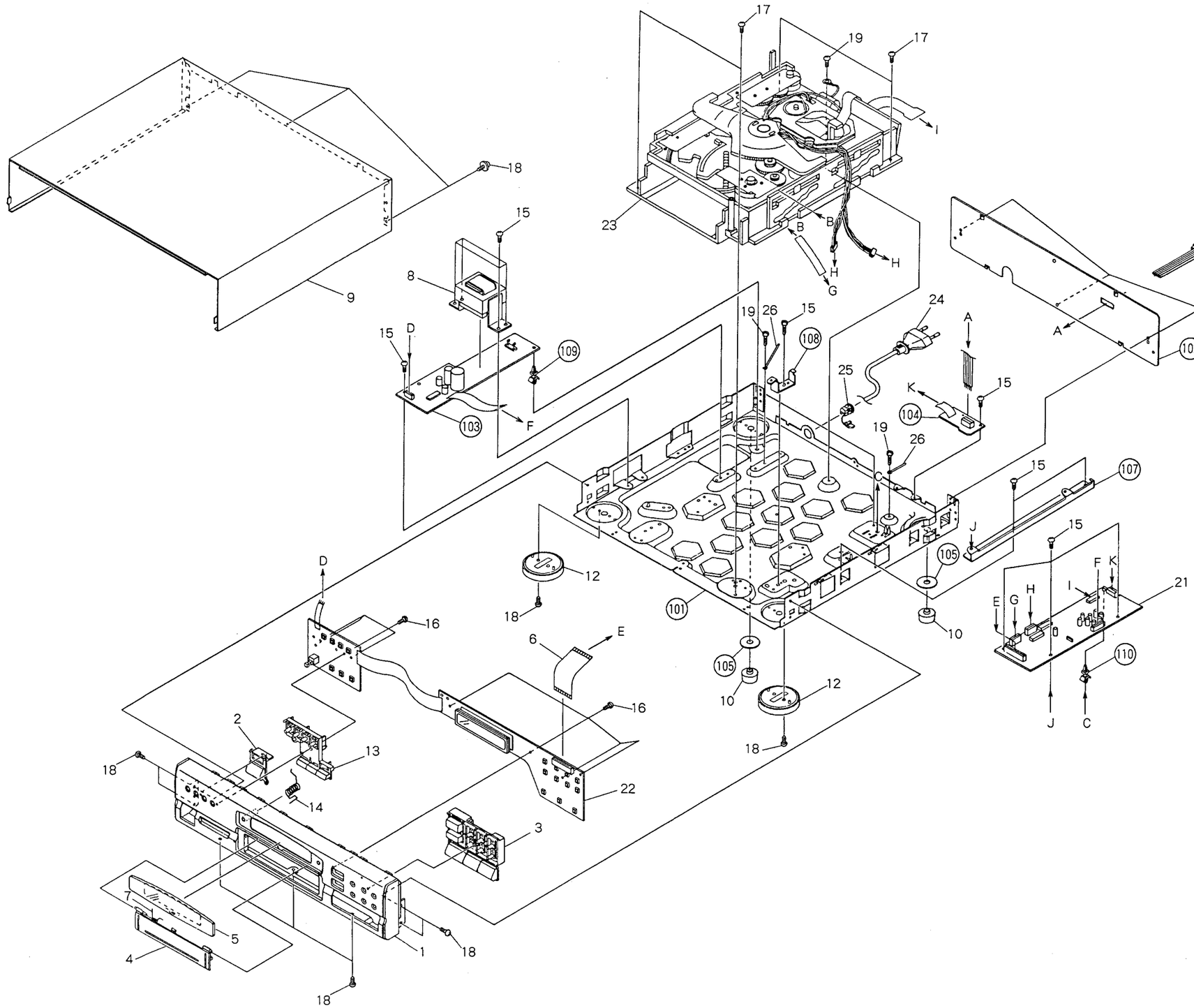
ble.

No.

832
721
2204
2206
1158

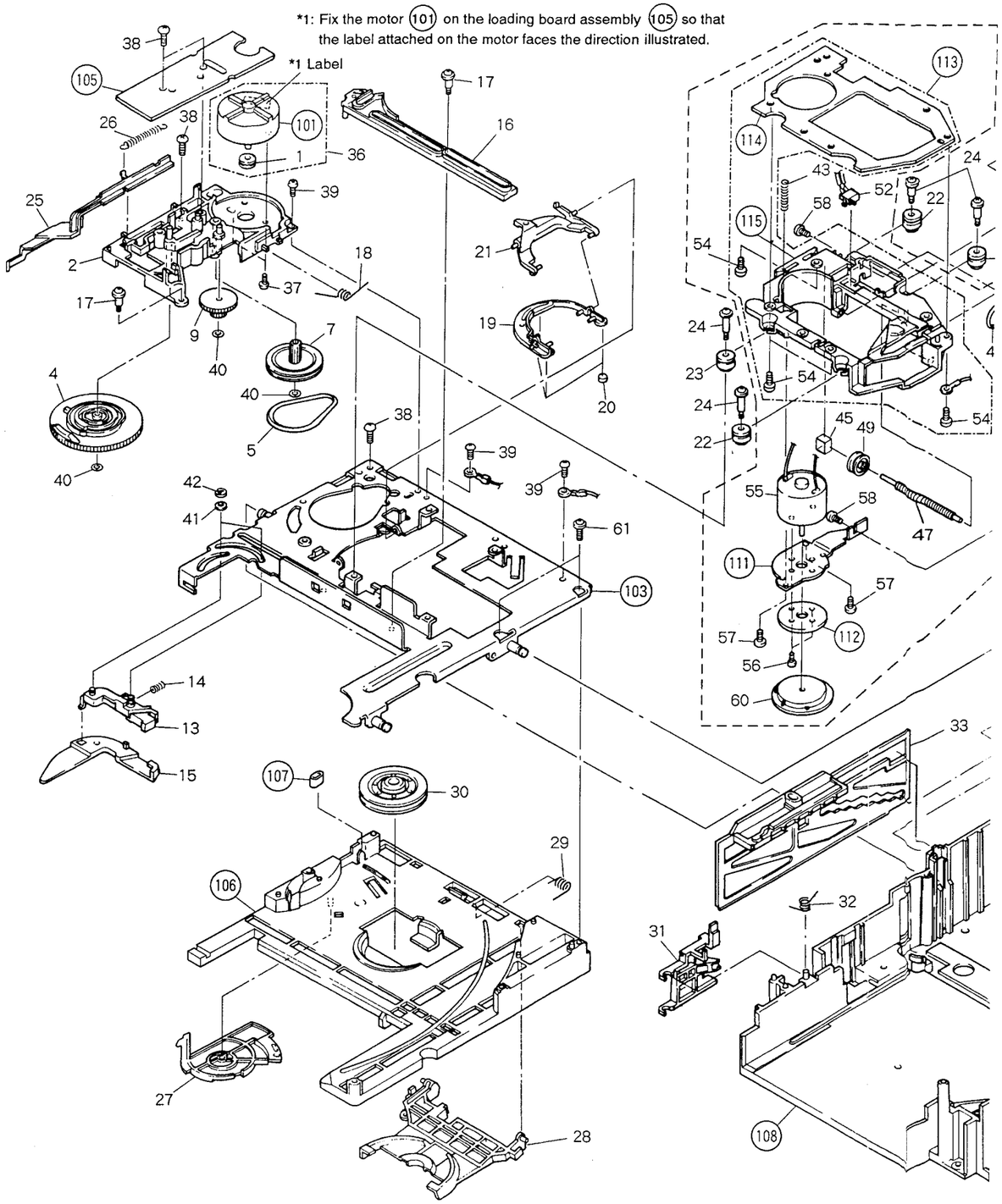
385
386
2100
2174



2.2 MULTI MECHANISM ASSEMBLY

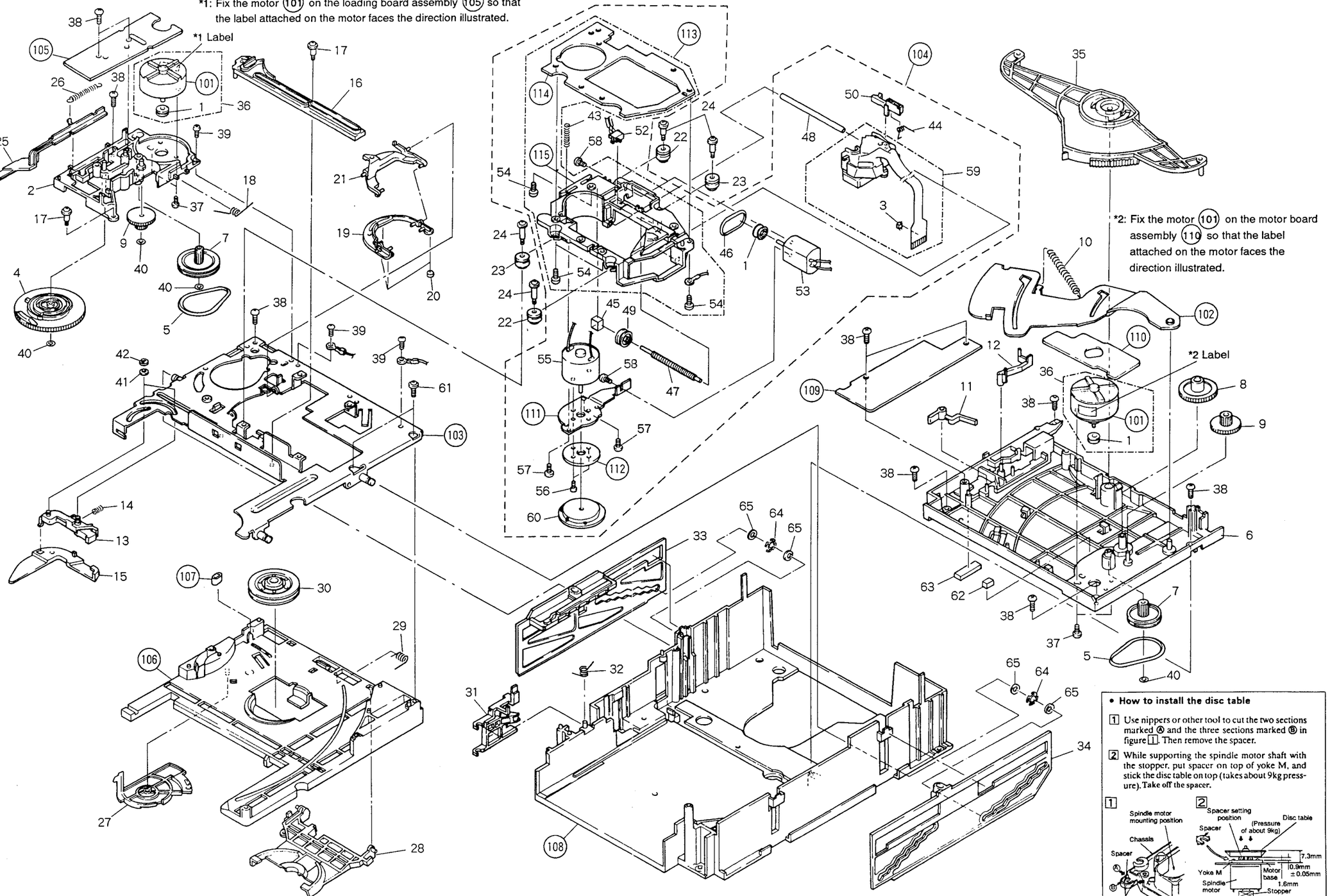
Parts List

Mark	No.	Description	Part No.
	1	Motor pulley	PNW1634
	2	Gear holder	PNW1929
	3	Semi-fixed resistor (VR1)	PCP1008
	4	Cam gear	PNW1923
	5	Belt	PEB1138
	6	Top guide	PNW1914
	7	Gear pulley	PNW1918
	8	Gear S	PNW1919
	9	Gear L	PNW1920
	10	Eject spring	PBH1107
	11	Switch lever	PNW1927
	12	Seven bar	PNW1931
	13	Sub rotary lever	PNW1933
	14	Sub rotary lever spring	PBH1111
	15	Rotary lever	PNW1932
	16	Drive plate	PNW1930
	17	Motor screw	PBA-112
	18	Holder lever spring	PBH1110
	19	Disc holder	PNW1924
	20	Cushion A	PED1001
	21	Holder lever	PNW1925
	22	Float rubber	PEB1014
	23	Float rubber	PEB1132
	24	Float screw	PBA1055
	25	Release lever	PNW1934
	26	Release spring	PBH1106
	27	Clamper cam	PNW1922
	28	Clamper holder	PNW1921
	29	Clamper spring	PBH1109
	30	Clamper	PNW1857
	31	Lock lever	PNW1917
	32	Lock spring	PBH1108
	33	Stair L	PNW1915
	34	Stair R	PNW1916
	35	Synchronize lever	PNW1926
	36	Motor assembly (LOADING, DISC SELECT)	PEA1130
	37	Screw	PMZ26P040FMC
	38	Screw	PPZ30P080FMC
	39	Screw	BBZ30P060FMC
	40	Washer	WT26D047D025
	41	Washer	WA31D054D025
	42	E ring	Z39-010
	43	Earth spring	PBH1009
	44	Drive spring	PBH1084
	45	Plate spring	PBK1057
	46	Belt	PEB1072
	47	Drive screw	PLA1003
	48	Guide bar	PLA1071
	49	Pulley	PNW1066
	50	Half nut	PNW1605
	51	• • • • •	
	52	Push switch (INSIDE)	DSG1014
	53	D.C.motor (CARRIAGE)	PXM1013
	54	Screw	PBZ30P080FMC
	55	D.C.motor assembly (with oil)(SPINDLE)	PEA1028
	56	Screw	JFZ20P040FMC
	57	Screw	BPZ20P080FZK
	58	Screw	PMZ20P030FMC
	59	Pickup assembly	PEA1030
	60	Disc table assembly	PEA1035
	61	Screw	IPZ30P080FMC
	62	Rubber spacer	PEB1178
	63	Rubber spacer	PEB1179
	64	Silent ring	PBK1093
	65	Washer	WA62D130D025
	101	Motor	VXM1033
	102	Eject lever	PNB1306
	103	Upper chassis	PNB1267
	104	Servo mechanism assembly M	PXA1364
	105	Loading board assembly	PWZ2038
	106	Sub chassis	PNW2027
	107	Rubber tube	PEB1171
	108	Main chassis	PNW2026
	109	Select board assembly	PWZ2039
	110	Motor board assembly	PWZ2040
	111	Motor base	PNB1211
	112	Yoke M	PNB1227
	113	Mechanism base assembly T	PXA1294
	114	Mechanism base	PNB1230
	115	Mechanism chassis	PNW1604


*1: Fix the motor (101) on the loading board assembly (105) so that the label attached on the motor faces the direction illustrated.
*1 Label

*1: Fix the motor (101) on the loading board assembly (105) so that the label attached on the motor faces the direction illustrated.

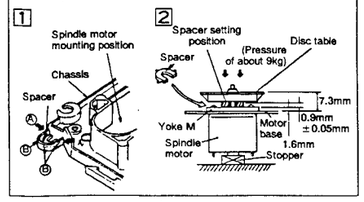
*2: Fix the motor (101) on the motor board assembly (110) so that the label attached on the motor faces the direction illustrated.



- **How to install the disc table**

1 Use nippers or other tool to cut the two sections marked Ⓐ and the three sections marked Ⓑ in figure 1. Then remove the spacer.

2 While supporting the spindle motor shaft with the stopper, put spacer on top of yoke M, and stick the disc table on top (takes about 9kg pressure). Take off the spacer.



3. SCHEMATIC DIAGRAM

1. RESISTORS:
Indicated in Ω , 1/4W, 1/6W, 1/8W and 1/10W, ± 5% tolerance unless otherwise noted k ; kΩ , M ; MΩ , (F) ; ± 1%, (G) ; ± 2%, (K) ; ± 10%, (M) ; ± 20% tolerance.

2. CAPACITORS:
Indicated in capacity (μF) /voltage (V) unless otherwise noted p ; pF. Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE, CURRENT:
⎡ ⎤ ;DC voltage (V) at play state.
⇦ mA ;DC current at play state.
;Value in ( ) is DC current at stop state.

4. OTHERS:
➡ ; Signal route.
⊘ ; Adjusting point.
The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
※ marked capacitors and resistors have parts numbers.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

5. SWITCHES:(The underlined indicates the switch position)
MOTHER BOARD ASSEMBLY
S351: TEST

FUNCTION BOARD ASSEMBLY
S701: 4 (DISC NUMBER)
S702: PROGRAM
S703: SEARCH (⏮◁◁/◁◁)
S704: 5 (DISC NUMBER)
S705: EJECT (⏏)
S706: PLAY/ PAUSE (▷/⏸)
S707: 2 (DISC NUMBER)
S708: RANDOM
S709: REPEAT
S710: 6 (DISC NUMBER)
S711: SEARCH (▷▷/ ▷▷⏭)
S712: STOP (□)
S713: 1 (DISC NUMBER)
S714: TIME
S715: HI - LITE SCAN
S716: 3 (DISC NUMBER)
S717: COMPU PGM
S718: DELETE
S751: POWER

LOADING BOARD ASSEMBLY
S601: LPS1 LOADING POSITION
S602: LPS2

SELECT BOARD ASSEMBLY
S603: MZS1 MAGAZINE
S604: MZS2
S605: DCHM DISC POSITION
S606: DCNT

● Terminal Voltages

IC151
(CXA1372Q)

Pin No.	Voltage	Pin No.	Voltage
1	0	25	5
2	0	26	0
3	0	27	5
4	0	28	0
5	0.2	29	0
6	0	30	N.C.
7	0.2	31	2.5
8	0	32	2.5
9	0	33	5
10	5	34	-1.5
11	0	35	-1.7
12	0	36	5
13	0	37	-0.7
14	0.2—0.8	38	-1.6
15	0	39	0
16	-4	40	0.8
17	1.3	41	-5
18	0	42	0
19	-5	43	0
20	5	44	0
21	5	45	0
22	5	46	0
23	5	47	0
24	5	48	0

IC20
(M5298P)

Pin No.	Voltage	Pin No.	Voltage
1	-8.7	9	5
2	N. C.	10	N. C.
3	-5	11	0.6
4	0.2	12	5
5	-8.7	13	8.2
6	-6.9	14	5
7	N. C.	15	1.2
8	N. C.	16	8.2

IC301
(CXD2500AQ)

Pin No.	Voltage	Pin No.	Voltage
1	5	41	N. C.
2	N. C.	42	5
3	5	43	N. C.
4	2.6	44	N. C.
5	N. C.	45	N. C.
6	5	46	4.4
7	N. C.	47	0
8	N. C.	48	0
9	0	49	0 - 0.3
10	0	50	N. C.
11	N. C.	51	N. C.
12	0	52	0
13	N. C.	53	2.5
14	N. C.	54	N. C.
15	N. C.	55	0
16	N. C.	56	N. C.
17	0	57	N. C.
18	2.5	58	N. C.
19	2.4	59	0
20	2.4	60	N. C.
21	0	61	N. C.
22	2.5	62	N. C.
23	5	63	0
24	2.5	64	N. C.
25	N. C.	65	0
26	0	66	3.3 -4.6
27	2.5	67	5
28	0	68	0
29	N. C.	69	2.1 -3
30	0	70	5
31	N. C.	71	5
32	2.5	72	5
33	5	73	5
34	2.5	74	5
35	2.5	75	5
36	N. C.	76	0
37	N. C.	77	5
38	N. C.	78	5
39	N. C.	79	5
40	N. C.	80	0

IC351
(PD4377A)

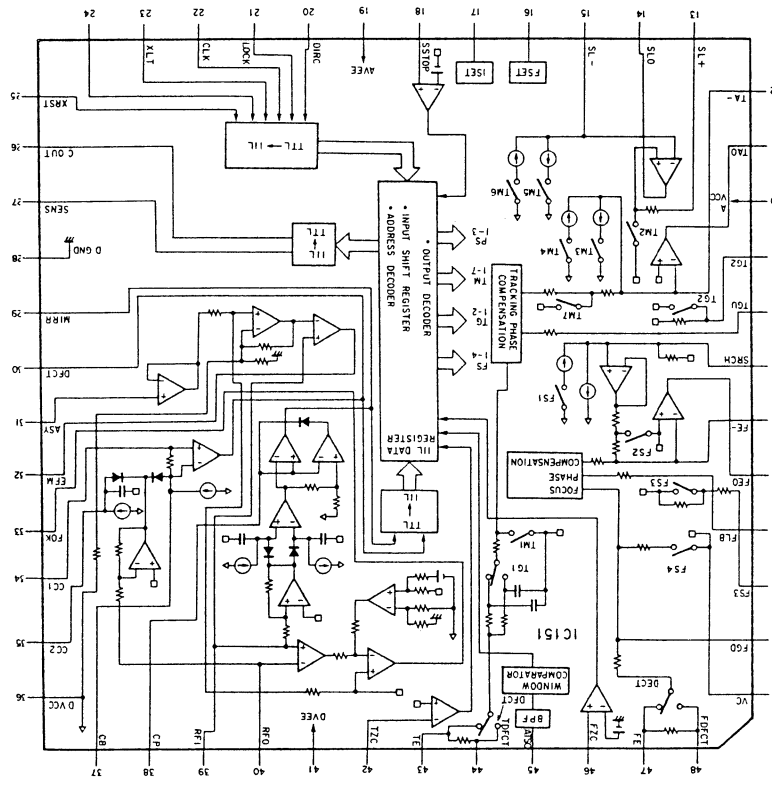
Pin No.	Voltage	Pin No.	Voltage
1	5	33	5
2	-23	34	3.8
3	-23	35	4.8
4	-23	36	0
5	-23	37	5
6	-23	38	1.2
7	-23	39	0
8	-23	40	5
9	-23	41	N. C.
10	N. C.	42	0
11	N. C.	43	5
12	0	44	0
13	0	45	5
14	0	46	0
15	0	47	0
16	0.5	48	0
17	1.9	49	0
18	-27	50	0
19	-5	51	0
20	0.8	52	0
21	0.4	53	5
22	-8	54	5
23	1.0	55	5
24	-4	56	2.2
25	0	57	2.2
26	5	58	0
27	0	59	0
28	0	60	N. C.
29	0	61	0
30	-8	62	0
31	5	63	4.8
32	5	64	0

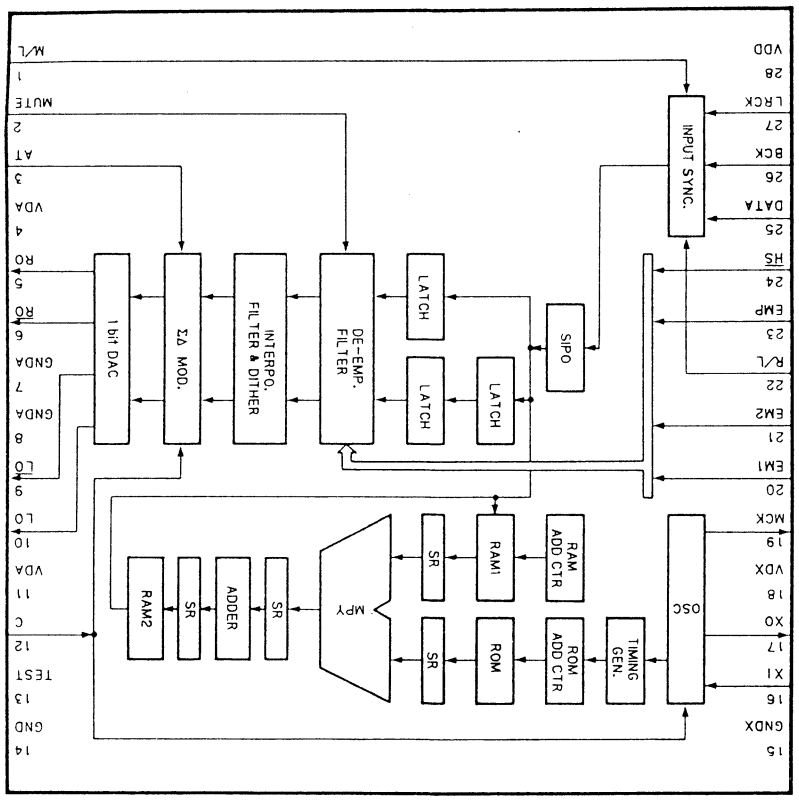
IC401
(TC9237BF)

Pin No.	Voltage	Pin No.	Voltage
1	5	15	0
2	0	16	1.9
3	5	17	1.9
4	5.5	18	5
5	2.5	19	2
6	2.5	20	0
7	0	21	0
8	0	22	0
9	2.5	23	0
10	2.5	24	5
11	5	25	2.5
12	0	26	2.5
13	N. C.	27	2.5
14	0	28	5

IC101
(CXA1471S)

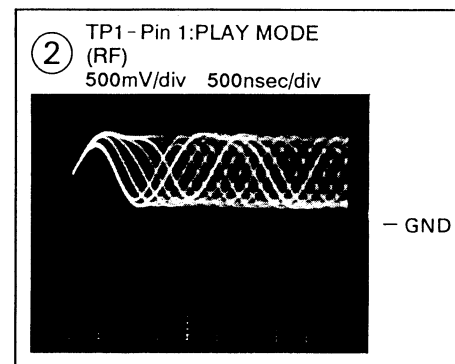
Pin No.	Voltage	Pin No.	Voltage
1	N. C.	12	N. C.
2	2.9	13	-0.9
3	-4.7	14	-0.7
4	0	15	0
5	0	16	0
6	-5	17	0
7	0	18	0.8
8	0	19	0
9	N. C.	20	5
10	0	21	5
11	N. C.	22	N. C.

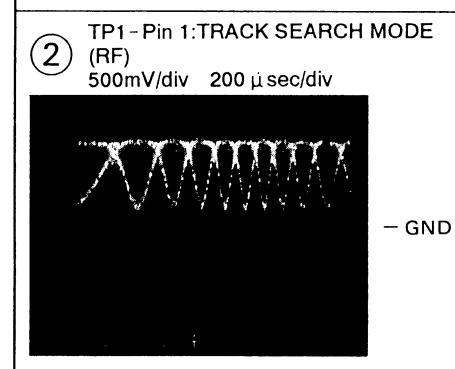


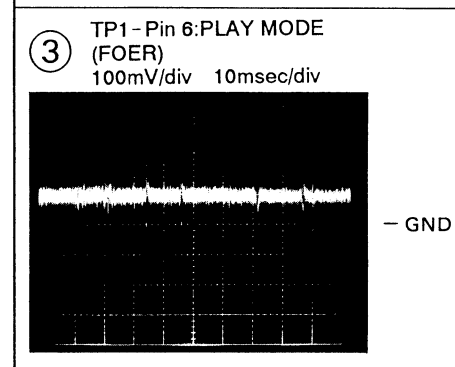


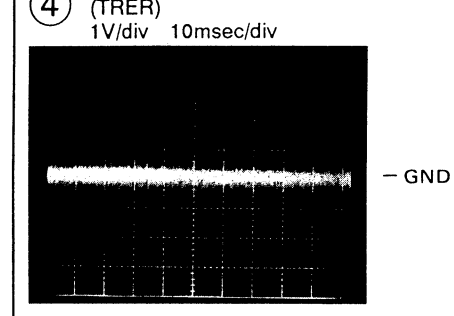
3.1 WAVEFORMS

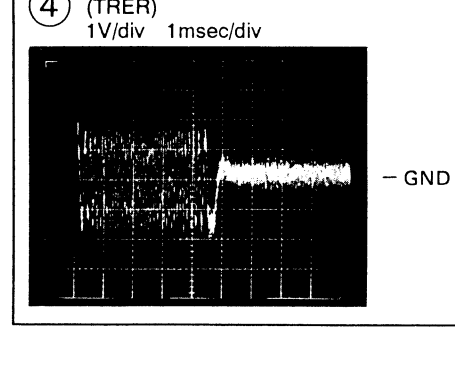
Note: The encircled numbers denote measuring points in the schematic diagram.



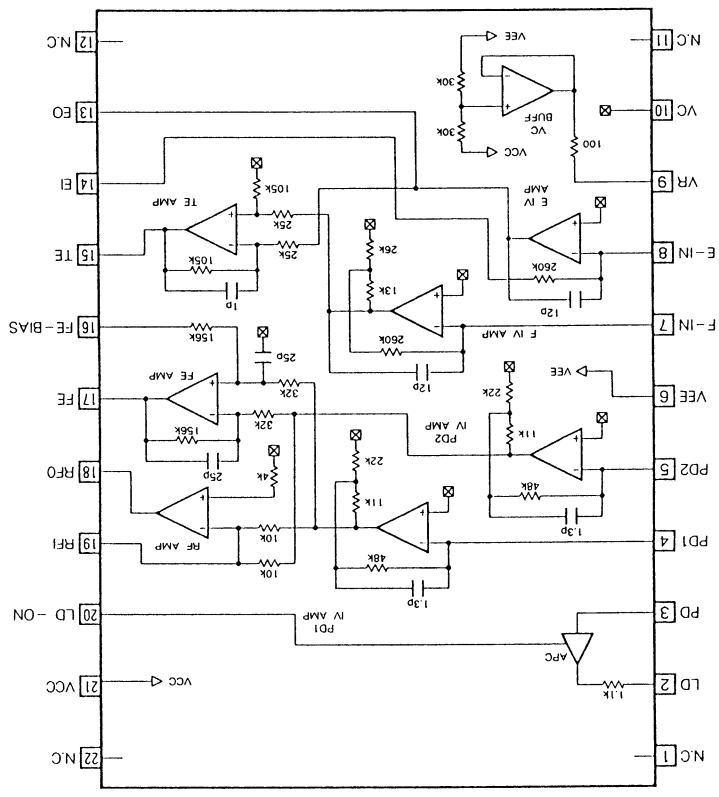


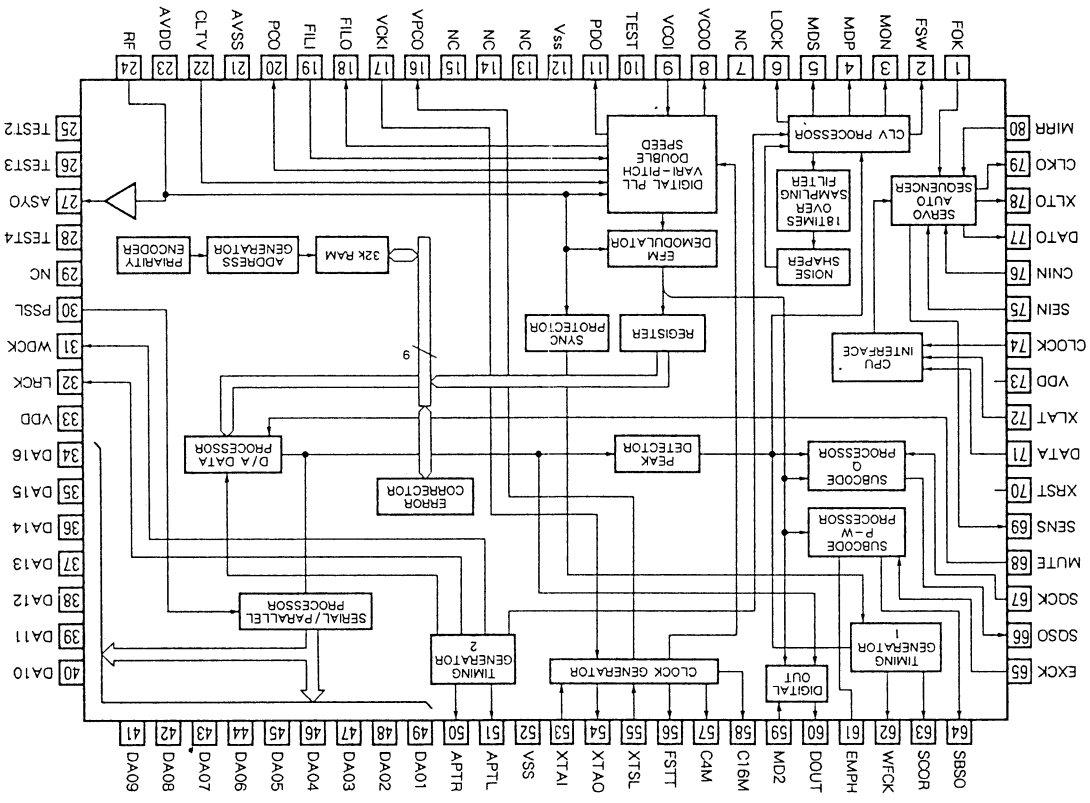


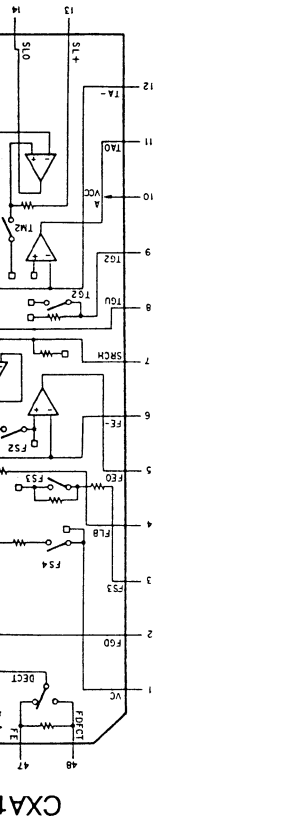




● IC BLOCK DIAGRAMS







*1 50T-JUMP: After switching to the pause mode, press the manual search key.
*2 FOCUS-IN: Press the key without loading a disc.

C202-Pin1 : FOCUS-IN (* 2) MODE (FODR)
V/div 200msec/div
— GND

⑦ IC201-Pin 9: TRACK SEARCH MODE (SPDR)
2V/div 50msec/div
— GND

C202-Pin1 : PLAY MODE (FODR)
V/div 1msec/div
— GND

⑧ IC201-Pin 3: PLAY MODE (CADR)
1V/div 2S/div
— GND

C202-Pin 3:PLAY MODE (TRDR)
00mV/div 1msec/div
— GND

⑧ IC201-Pin 3: TRACK SEARCH MODE (CADR)
2V/div 200msec/div
— GND

C202-Pin 3:50T-JUMP (*1) MODE (TRDR)
00mV/div 1msec/div
— GND

⑨ IC151-Pin 32:PLAY MODE (EFM)
2V/div 500nsec/div
— GND

201-Pin 9: PLAY MODE (PDR)
V/div 50msec/div
— GND

⑩ IC401-Pin 9:PLAY MODE (D/A DATA OUT)
2V/div 0.1 μsec/div
— GND

⑯ IC301-Pin 35:PLAY MODE (1kHz) (BCLK)
2V/div 500nsec/div
— GND

⑱ IC301-Pin 32:PLAY MODE (1kHz) (LRCK)
2V/div 10 μsec/div
— GND

⑲ IC301-Pin 34:PLAY MODE (1kHz) (DATA)
2V/div 500nsec/div
— GND

⑳

㉑ CN383-Pin1 : PLAY MODE (1kHz) (L ch OUTPUT)
1V/div 200 μsec/div
— GND

㉒ IC20-Pin 9:POWER SWITCH-ON (RST)
2V/div 100msec/div
— GND

㉒ IC20-Pin 9:POWER SWITCH-OFF (RST)
2V/div 100msec/div
— GND

㉓ :TRACK SEARCH MODE
Upper:TP1-Pin 1 (RF) 1V/div
Lower:IC151-Pin 29 (MIRR)
2V/div 200 μsec/div
— GND
— GND

㉔ :PLAY MODE
Upper:TP1-Pin 1 (RF) 1V/div
Lower:IC151-Pin 30 (DFCT)
5V/div 200 μsec/div
— GND
— GND

㉕

㉖

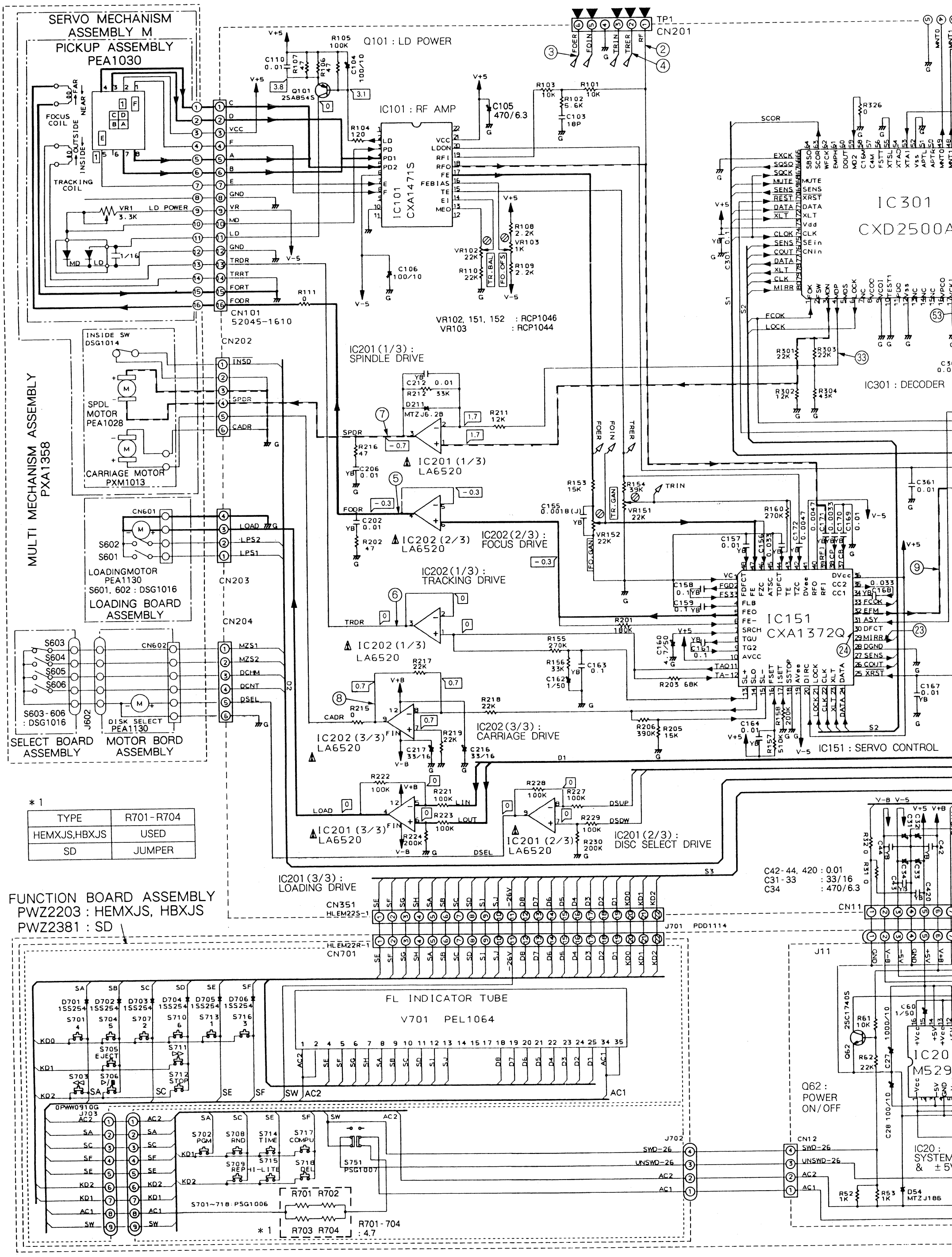
㉗

㉘

㉝ IC301-Pin 4:PLAY MODE (MDP)
2V/div 2 μsec/div
— GND

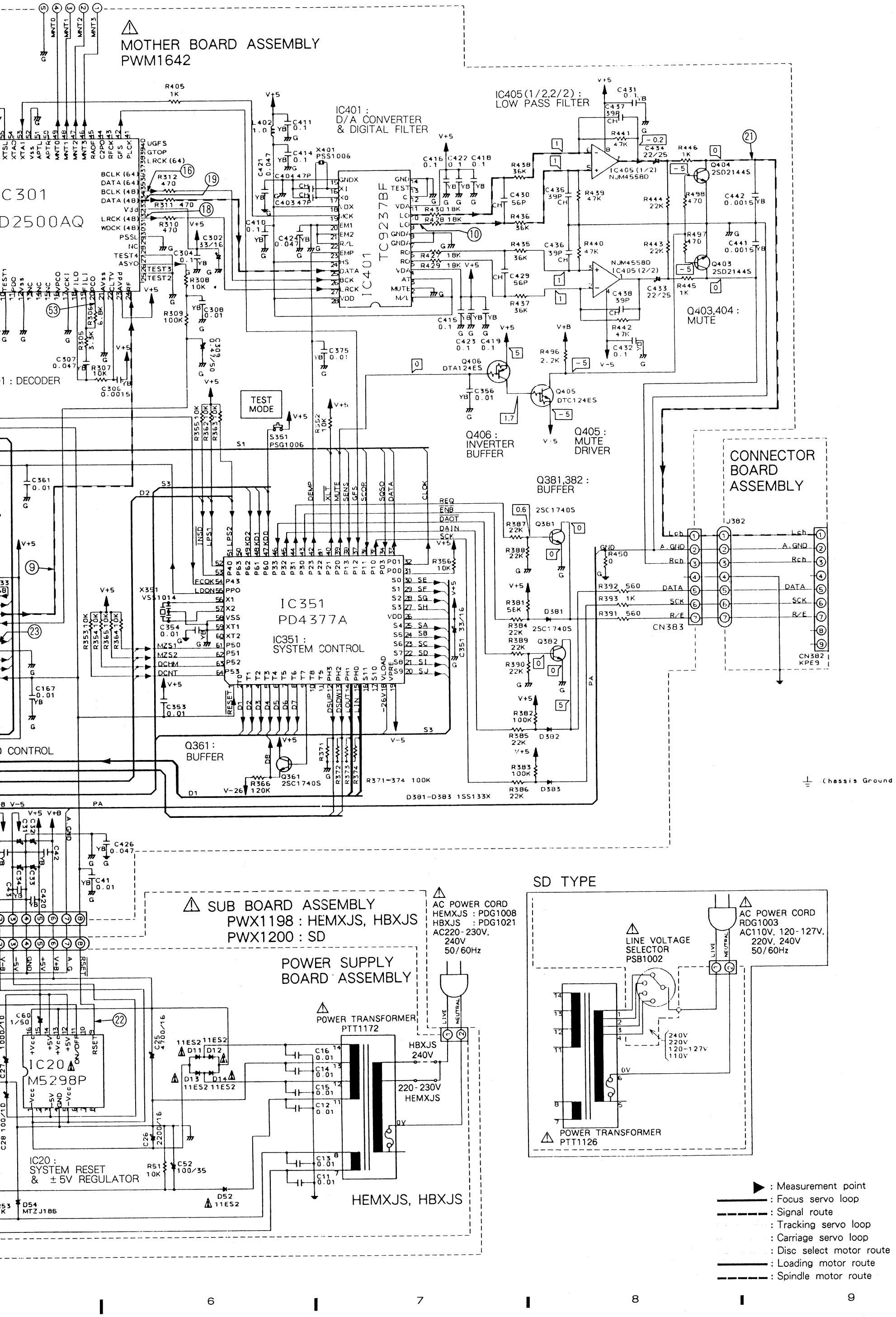
㊸ IC301-Pin 20:PLAY MODE (PCO)
2V/div 10 μsec/div
— GND

3.2 SCHEMATIC DIAGRAM

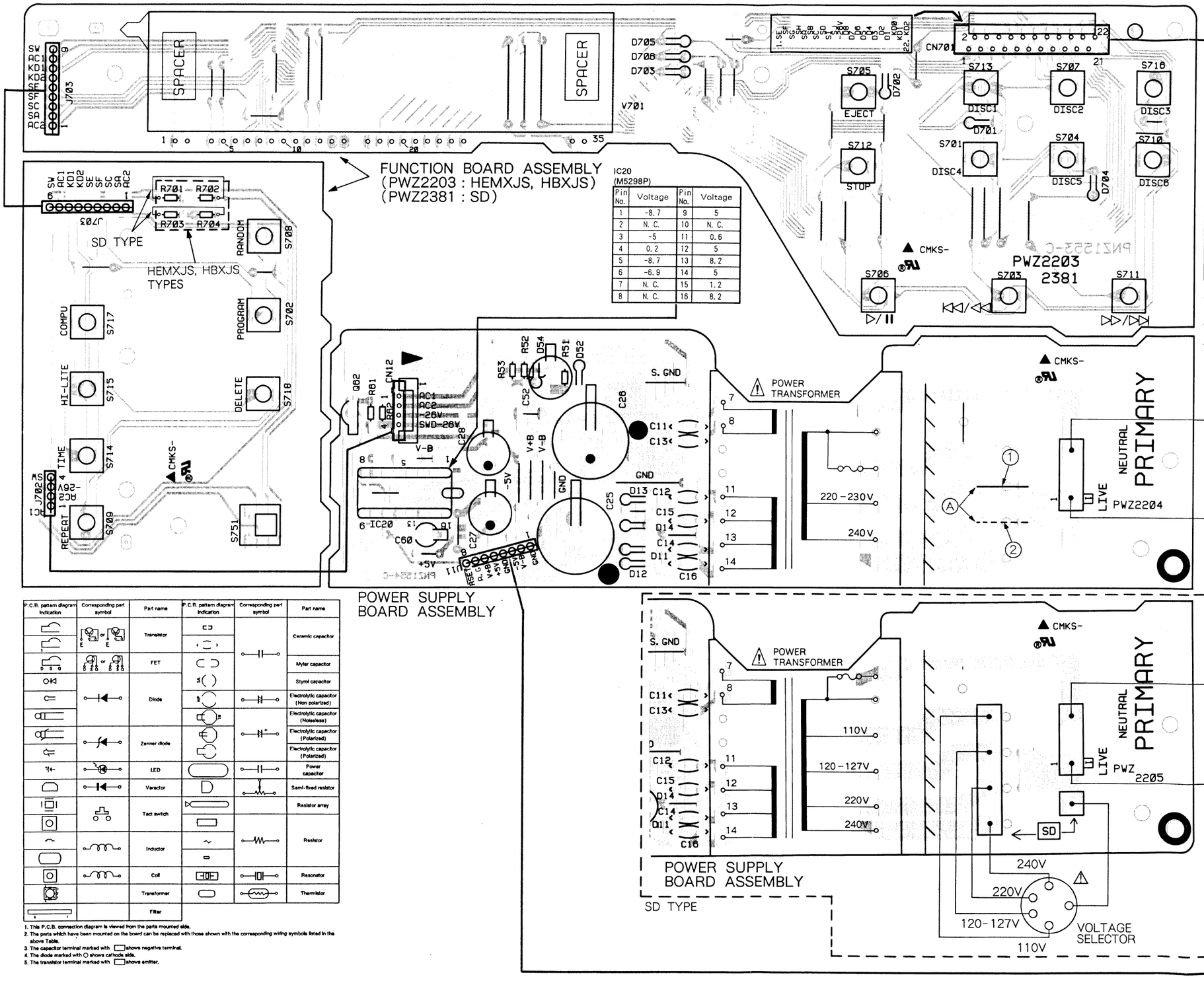


* 1

TYPE	R701-R704
HEMXJS,HBXJS	USED
SD	JUMPER


MOTHER BOARD ASSEMBLY
PWM1642
IC401 : D/A CONVERTER & DIGITAL FILTER
IC401 TC9237BF
IC405(1/2,2/2) : LOW PASS FILTER
IC405(1/2) NJM4558D
NJM4558D IC405(2/2)
Q403,404 : MUTE
Q404 2SD2144S
Q403 2SD2144S
Q406 DTA124ES
Q405 DTC124ES
Q406 : INVERTER BUFFER
Q405 : MUTE DRIVER
TEST MODE
S351 PSG1006
IC351 PD4377A
IC351 : SYSTEM CONTROL
Q361 : BUFFER
Q361 2SC1740S
Q381,382 : BUFFER
2SC1740S
D381-D383 1SS133X
R371-374 100K
CONNECTOR BOARD ASSEMBLY
J382
CN383
CN382 KPE9
SUB BOARD ASSEMBLY
PWX1198 : HEMXJS, HBXJS
PWX1200 : SD
POWER SUPPLY BOARD ASSEMBLY
AC POWER CORD
HEMXJS : PDG1008
HBXJS : PDG1021
AC220-230V, 240V 50/60Hz
POWER TRANSFORMER PTT1172
HBXJS 240V
220-230V HEMXJS
IC20 M5298P
IC20 : SYSTEM RESET & ±5V REGULATOR
HEMXJS, HBXJS
SD TYPE
LINE VOLTAGE SELECTOR PSB1002
AC POWER CORD
RDG1003
AC110V, 120-127V, 220V, 240V 50/60Hz
POWER TRANSFORMER PTT1126
240V
220V
120-127V
110V
: Measurement point
: Focus servo loop
: Signal route
: Tracking servo loop
: Carriage servo loop
: Disc select motor route
: Loading motor route
: Spindle motor route
Chassis Ground

4. P.C.BOARDS CONNECTION DIAGRAM



Line voltage can be changed with following steps

1. Disconnect the AC power cord.
2. Remove the bonnet.
3. Change the position of the jumper Ⓐ as follow.

Voltage	jumper Ⓐ position
220-230V	①
240V	②

4. Stick the voltage label on the rear panel.

Description	Part No.
220V label	AAX-193
240V label	AAX-192

IC20 (M5298P)

Pin No.	Voltage	Pin No.	Voltage
1	-8.7	9	5
2	N. C.	10	N. C.
3	-5	11	0.6
4	0.2	12	5
5	-8.7	13	8.2
6	-6.9	14	5
7	N. C.	15	1.2
8	N. C.	16	8.2

IC301 (CXD2500AQ)

Pin No.	Voltage	Pin No.	Voltage
1	5	41	N. C.
2	N. C.	42	5
3	5	43	N. C.
4	2.6	44	N. C.
5	N. C.	45	N. C.
6	5	46	4.4
7	N. C.	47	0
8	N. C.	48	0
9	0	49	0 - 0.3
10	0	50	N. C.
11	N. C.	51	N. C.
12	0	52	0
13	N. C.	53	2.5
14	N. C.	54	N. C.
15	N. C.	55	0
16	N. C.	56	N. C.
17	0	57	N. C.
18	2.5	58	N. C.
19	2.4	59	0
20	2.4	60	N. C.
21	0	61	N. C.
22	2.5	62	N. C.
23	5	63	0
24	2.5	64	N. C.
25	N. C.	65	0
26	0	66	3.3 -4.6
27	2.5	67	5
28	0	68	0
29	N. C.	69	2.1 -3
30	0	70	5
31	N. C.	71	5
32	2.5	72	5
33	5	73	5
34	2.5	74	5
35	2.5	75	5
36	N. C.	76	0
37	N. C.	77	5
38	N. C.	78	5
39	N. C.	79	5
40	N. C.	80	0

P.C.B. pattern diagram Indication	Corresponding part symbol	Part name	P.C.B. pattern diagram Indication	Corresponding part symbol	Part name
		Transistor			Ceramic capacitor
		FET			Mylar capacitor
		Diode			Styrol capacitor
					Electrolytic capacitor (Non polarized)
		Zenner diode			Electrolytic capacitor (Noiseless)
					Electrolytic capacitor (Polarized)
		LED			Power capacitor
		Varactor			Semi-fixed resistor
		Tact switch			Resistor array
		Inductor			Resistor
		Coil			Resonator
		Transformer			Thermistor
		Filter			

1. This P.C.B. connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the above Table.
3. The capacitor terminal marked with ▭ shows negative terminal.
4. The diode marked with ○ shows cathode side.
5. The transistor terminal marked with ▭ shows emitter.

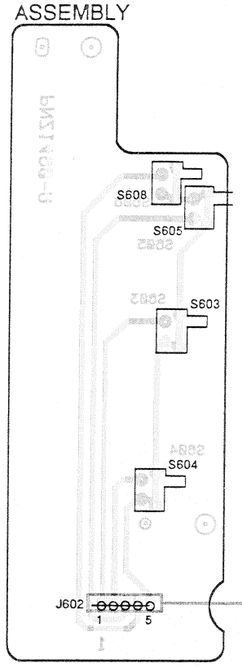
ith following steps

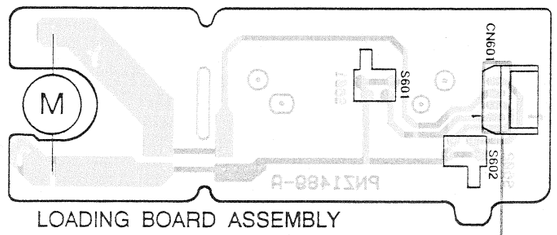
per (A) as follow.

tion

ear panel.

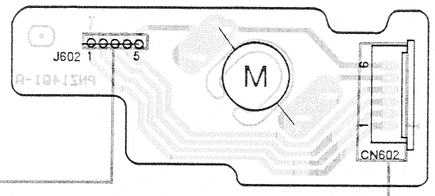
SELECT BOARD ASSEMBLY

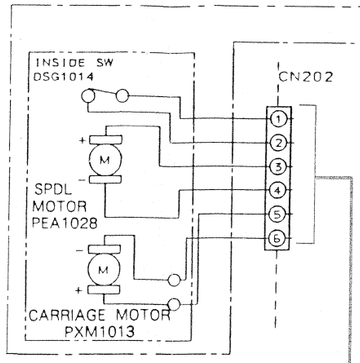


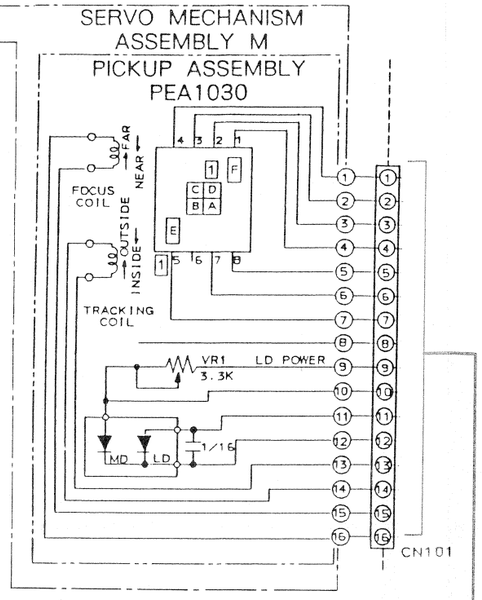


LOADING BOARD ASSEMBLY

MOTOR BOARD ASSEMBLY







IC151
(CXA1372Q)

Pin No.	Voltage	Pin No.	Voltage
1	0	25	5
2	0	26	0
3	0	27	5
4	0	28	0
5	0.2	29	0
6	0	30	N.C.
7	0.2	31	2.5
8	0	32	2.5
9	0	33	5
10	5	34	-1.5
11	0	35	-1.7
12	0	36	5
13	0	37	-0.7
14	0.2–0.8	38	-1.6
15	0	39	0
16	-4	40	0.8
17	1.3	41	-5
18	0	42	0
19	-5	43	0
20	5	44	0
21	5	45	0
22	5	46	0
23	5	47	0
24	5	48	0

IC101
(CXA1471S)

Pin No.	Voltage	Pin No.	Voltage
1	N.C.	12	N.C.
2	2.9	13	-0.9
3	-4.7	14	-0.7
4	0	15	0
5	0	16	0
6	-5	17	0
7	0	18	0.8
8	0	19	0
9	N.C.	20	5
10	0	21	5
11	N.C.	22	N.C.

1 (2500AQ) Voltage	Pin No.	Voltage
5	41	N.C.
N.C.	42	5
5	43	N.C.
2.6	44	N.C.
N.C.	45	N.C.
5	46	4.4
N.C.	47	0
N.C.	48	0
0	49	0 - 0.3
0	50	N.C.
N.C.	51	N.C.
0	52	0
N.C.	53	2.5
N.C.	54	N.C.
N.C.	55	0
N.C.	56	N.C.
0	57	N.C.
2.5	58	N.C.
2.4	59	0
2.4	60	N.C.
0	61	N.C.
2.5	62	N.C.
5	63	0
2.5	64	N.C.
N.C.	65	0
0	66	3.3 -4.6
2.5	67	5
0	68	0
N.C.	69	2.1 -3
0	70	5
N.C.	71	5
2.5	72	5
0	73	5
2.5	74	5
2.5	75	5
N.C.	76	0
N.C.	77	5
N.C.	78	5
N.C.	79	5
N.C.	80	0

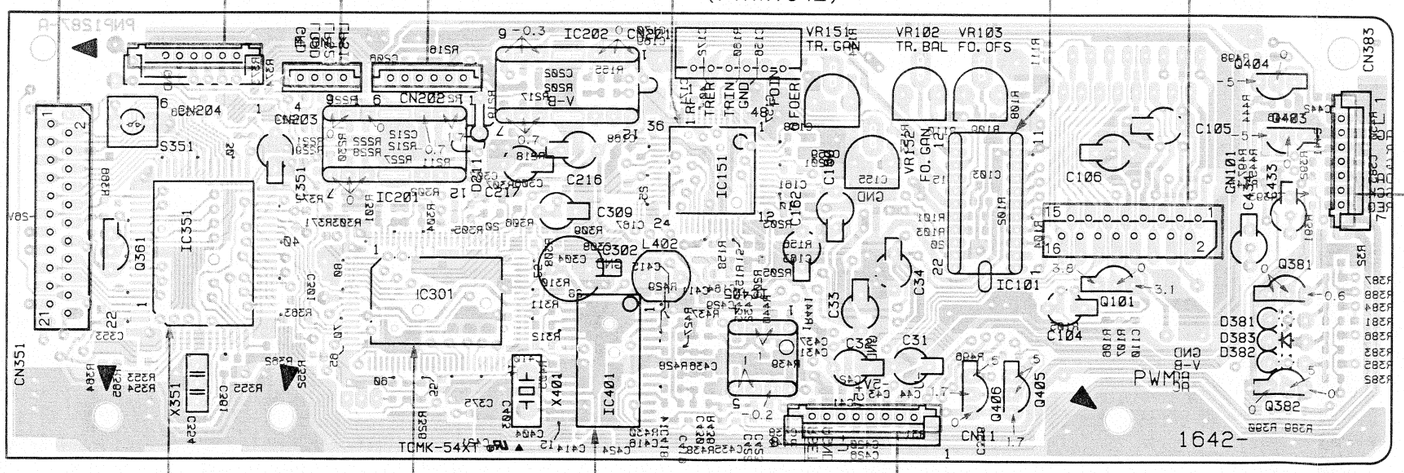
IC351
(PD4377A)

Pin No.	Voltage	Pin No.	Voltage
1	5	33	5
2	-23	34	3.8
3	-23	35	4.8
4	-23	36	0
5	-23	37	5
6	-23	38	1.2
7	-23	39	0
8	-23	40	5
9	-23	41	N.C.
10	N.C.	42	0
11	N.C.	43	5
12	0	44	0
13	0	45	5
14	0	46	0
15	0	47	0
16	0.5	48	0
17	1.9	49	0
18	-27	50	0
19	-5	51	0
20	0.8	52	0
21	0.4	53	5
22	-8	54	5
23	1.0	55	5
24	-4	56	2.2
25	0	57	2.2
26	5	58	0
27	0	59	0
28	0	60	N.C.
29	0	61	0
30	-8	62	0
31	5	63	4.8
32	5	64	0

IC401
(TC9237BF)

Pin No.	Voltage	Pin No.	Voltage
1	5	15	0
2	0	16	1.9
3	5	17	1.9
4	5.5	18	5
5	2.5	19	2
6	2.5	20	0
7	0	21	0
8	0	22	0
9	2.5	23	0
10	2.5	24	5
11	5	25	2.5
12	0	26	2.5
13	N.C.	27	2.5
14	0	28	5

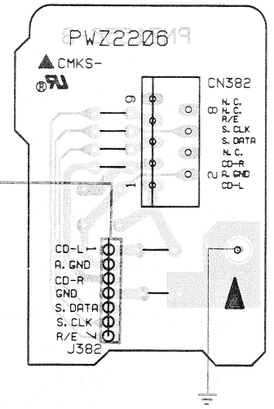
MOTHER BOARD ASSEMBLY
(PWM1642)



VR151 VR152 VR102 VR103

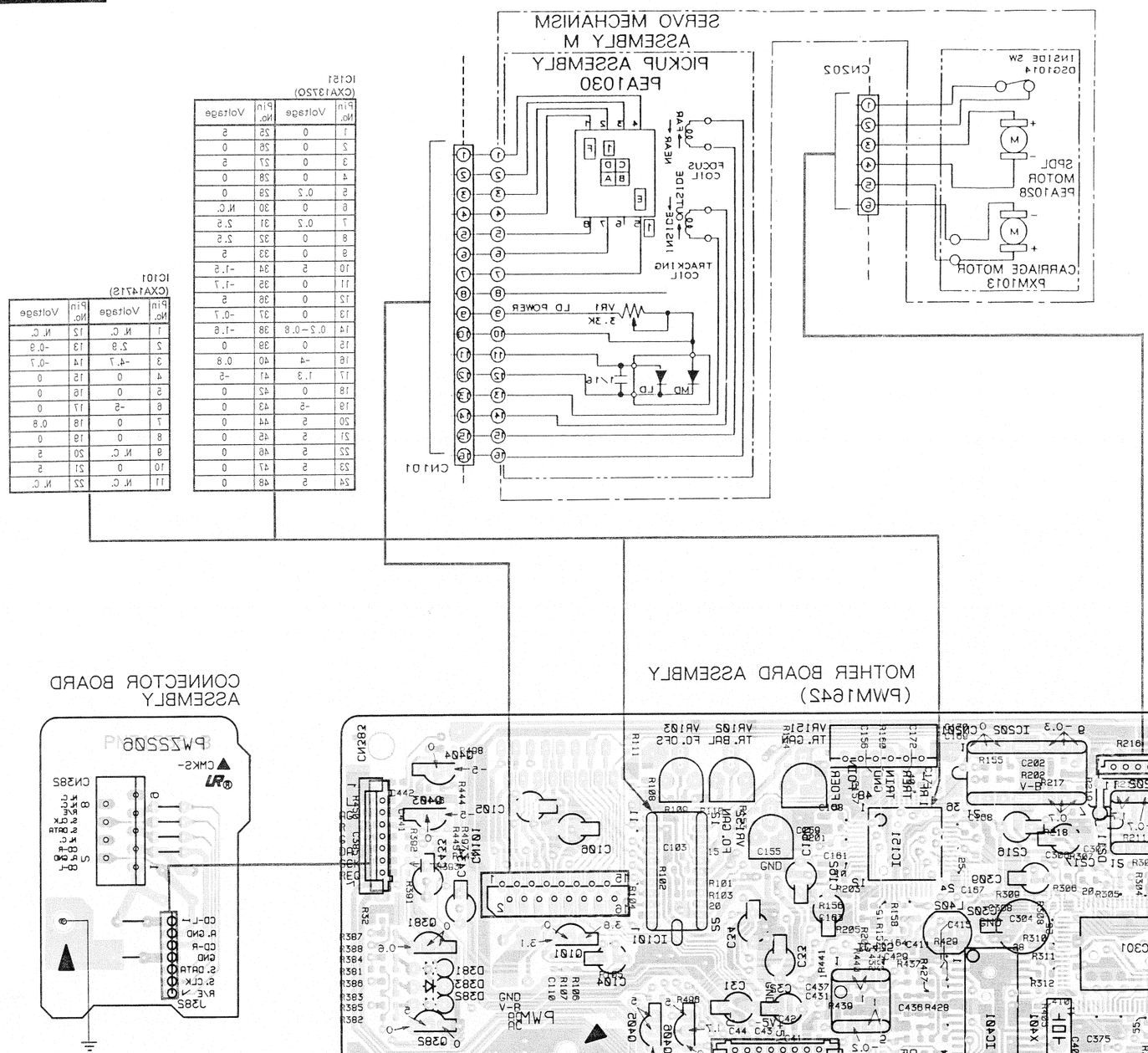
Q361 IC351 IC201 IC301 IC202 IC401 IC151 IC405 IC101 Q406 Q405 Q101 Q404 Q403 Q381 Q382

CONNECTOR BOARD ASSEMBLY



A B C D

7 8 9 10 11 12



IC101 (CXA1471S)

Pin No.	Voltage	Pin No.	Voltage
1	N. C.	12	N. C.
2	2.9	13	-0.9
3	-4.7	14	-0.7
4	0	15	0
5	0	16	0
6	-5	17	0
7	0	18	0.8
8	0	19	0
9	N. C.	20	5
10	0	21	5
11	N. C.	22	N. C.

IC151 (CXA1372Q)

Pin No.	Voltage	Pin No.	Voltage
1	0	26	5
2	0	26	0
3	0	27	5
4	0	28	0
5	0.2	29	0
6	0	30	N. C.
7	0.2	31	2.5
8	0	32	2.5
9	0	33	5
10	5	34	-1.5
11	0	35	-1.7
12	0	36	5
13	0	37	-0.7
14	0.2–0.8	38	-1.6
15	0	39	0
16	-4	40	0.8
17	1.3	41	-5
18	0	42	0
19	-5	43	0
20	5	44	0
21	5	45	0
22	5	46	0
23	5	47	0
24	5	48	0

IC401 (TC9239BF)

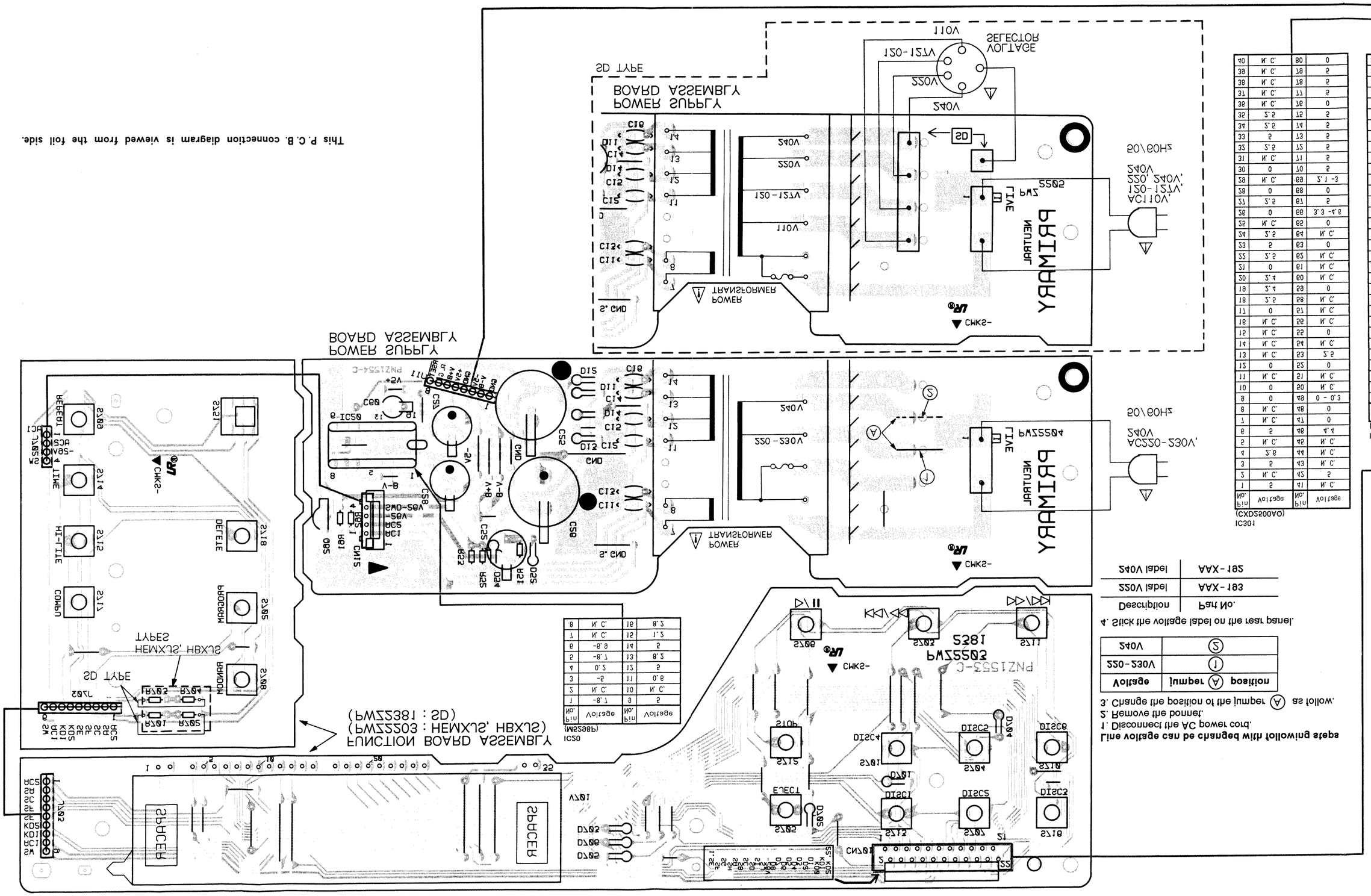
Pin No.	Voltage	Pin No.	Voltage
1	5	15	0
2	0	16	1.9
3	5	17	1.9
4	5.6	18	5
5	2.5	19	2
6	2.5	20	0
7	0	21	0
8	0	22	0
9	2.5	23	0
10	2.5	24	5
11	5	25	2.5
12	0	26	2.5
13	N. C.	27	2.5
14	0	28	5

IC351 (PD4377A)

Pin No.	Voltage	Pin No.	Voltage
1	5	33	5
2	-23	34	3.8
3	-23	35	4.8
4	-23	36	0
5	-23	37	5
6	-23	38	1.2
7	-23	39	0
8	-23	40	5
9	-23	41	N. C.
10	N. C.	42	0
11	N. C.	43	5
12	0	44	0
13	0	45	5
14	0	46	0
15	0	47	0
16	0.5	48	0
17	1.9	49	0
18	-27	50	0
19	-5	51	0
20	0.8	52	0
21	0.4	53	5
22	-8	54	5
23	1.0	55	5
24	-4	56	2.2
25	0	57	2.2
26	5	58	0
27	0	59	0
28	0	60	N. C.
29	0	61	0
30	-8	62	0
31	5	63	4.8
32	5	64	0

4. P.C.BOARDS CONNECTION DIAGRAM

This P. C. B. connection diagram is viewed from the foil side.



Pin No.	Voltage	Pin No.	Voltage
1	-8.8	16	N. C.
2	-8.8	15	2.1
3	-8	14	2
4	0.0	13	2
5	-8.8	12	2.1
6	-8.8	11	2
7	-8.8	10	N. C.
8	N. C.	9	2

(MAS98B)
IC50

Pin No.	Voltage	Pin No.	Voltage
1	2	41	N. C.
2	2	42	N. C.
3	-8	43	N. C.
4	-8	44	N. C.
5	0	45	N. C.
6	0	46	N. C.
7	0	47	N. C.
8	0	48	N. C.
9	0	49	N. C.
10	0	50	N. C.
11	N. C.	51	N. C.
12	N. C.	52	0
13	N. C.	53	2.5
14	N. C.	54	N. C.
15	N. C.	55	0
16	N. C.	56	N. C.
17	N. C.	57	N. C.
18	2.4	58	0
19	2.5	59	N. C.
20	2.4	60	0
21	0	61	N. C.
22	2.5	62	0
23	2	63	0
24	2.5	64	N. C.
25	2.5	65	N. C.
26	N. C.	66	0
27	0	67	2
28	N. C.	68	2.1 -3
29	0	69	0
30	0	70	2
31	N. C.	71	2
32	2.5	72	2
33	2	73	2
34	2.5	74	2
35	2.5	75	2
36	N. C.	76	2
37	N. C.	77	2
38	N. C.	78	2
39	N. C.	79	2
40	N. C.	80	0

(CXDS2004A)
IC301

Pin No.	Voltage	Pin No.	Voltage
1	2	41	N. C.
2	2	42	N. C.
3	-53	43	N. C.
4	-53	44	N. C.
5	-53	45	N. C.
6	-53	46	N. C.
7	-53	47	N. C.
8	-53	48	N. C.
9	-53	49	N. C.
10	N. C.	50	N. C.
11	N. C.	51	N. C.
12	0	52	0
13	0	53	0
14	0	54	N. C.
15	0	55	0
16	0	56	N. C.
17	0	57	0
18	-5	58	0 - 4.5
19	0.2	59	N. C.
20	0.0	60	0
21	0	61	N. C.
22	-8	62	0
23	0.1	63	-4
24	-5	64	2.5
25	2	65	2.5
26	2	66	2.5
27	2	67	2.5
28	2	68	2.5
29	2	69	2.5
30	-8	70	2
31	2	71	2
32	2	72	2
33	2	73	2
34	2	74	2
35	2	75	2
36	2	76	2
37	2	77	2
38	2	78	2
39	2	79	2
40	N. C.	80	0

(DP43ATA)
IC321

Description	Part No.
VOSS label	XAA-187
VOA5 label	XAA-187

4. Stick the voltage label on the test panel.

Voltage	Jumper (A) position
VOSS-VOEC	(J)
VOA5	(S)

3. Change the position of the jumper (A) as follow.
5. Remove the power.
1. Disconnect the AC power cord.

Line voltage can be changed with following steps

5. PCB PARTS LIST

NOTES:

- *Part without part number cannot be supplied.*
- *Parts marked by " ◉ " are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex.1 When there are 2 effective digits(any digit apart from 0), such as 560 ohm and 47k ohm(tolerance is shown by J=5%, and K=10%).

560 Ω 56 × 10¹ 561 ····· RD1/8PM 5 6 1 J
47k Ω 47 × 10³ 473 ····· RD1/4PS 4 7 3 J
0.5 Ω 0R5 ····· RN2H 0 R 5 K
1 Ω 010 ····· RS1P 0 1 0 K

Ex.2 When there are 3 effective digits(such as in high precision metal film resistors).

5.62k Ω 562 × 10¹ 5621 ····· RN1/4SR 5 6 2 1 F

Mark	No.	Description	Part No.
LIST OF ASSEMBLIES			
◉		Mother board assembly	PWM1642
◉		Sub board assembly	PWX1198
◉		├ Function board assembly	PWZ2203
		├ Power supply board assembly	
		└ Connector board assembly	
◉		Mechanism board assembly	PWX1151
		├ Loading board assembly	
		├ Select board assembly	
		└ Motor board assembly	
◉ MOTHER BOARD ASSEMBLY (PWM1642)			
SEMICONDUCTORS			
	IC101	PRE AMP IC	CXA1471S
	IC151	SERVO IC	CXA1372Q
⚠	IC201, 202	POWER OP-AMP, IC	LA6520
	IC301	EFM DEMODULATION IC	CXD2500AQ
	IC351	MICROCOMPUTER, IC	PD4377A
	IC401	8FS DF DA CONVERTER IC	TC9237BF
	IC405	OP-AMP IC	NJM4558D-D
	Q101	TRANSISTOR	2SA854S
	Q361, 381	TRANSISTOR	2SC1740S
	Q382	TRANSISTOR	2SC1740S
	Q403, 404	TRANSISTOR	2SD2144S
	Q405	TRANSISTOR	DTC124ES
	Q406	TRANSISTOR	DTA124ES
	D211	ZENNER DIODE	MTZJ6.2B
	D381-383	DIODE	1SS133X
SWITCH			
	S351	TACT SWITCH(TEST)	PSG1006
COIL			
	L402	RADIAL INDUCTOR	LFA010K

Mark	No.	Description	Part No.
CAPACITORS			
	C103	CHIP CAPACITOR	CCSQCH180J50
	C104	ELECTR. CAPACITOR	CEAS1□1M10
	C105	ELECTROLYTIC CAPACIT	CEAS47 1M6R3
	C106	ELECTR. CAPACITOR	CEAS1□1M10
	C110	CHIP CAPACITOR	CKSQYF103Z50
	C155	CERAMIC CAPACITOR	CKSQYB182K50
	C156	CERAMIC CAPACITOR	CKSQYB333K25
	C157	CERAMIC CAPACITOR	CKSQYB103K50
	C158, 159	CERAMIC CAPACITOR	CKSQYB104K25
	C160	ELECTR. CAPACITOR	CEAS4R7M50
	C161	CERAMIC CAPACITOR	CKSQYB104K25
	C162	ELECTR. CAPACITOR	CEAS0□0M50
	C163	CERAMIC CAPACITOR	CKSQYB104K25
	C164, 167	CERAMIC CAPACITOR	CKSQYB103K50
	C168	CERAMIC CAPACITOR	CKSQYB333K25
	C169	CERAMIC CAPACITOR	CKSQYB103K50
	C170	CERAMIC CAPACITOR	CKSQYB332K50
	C171, 172	CERAMIC CAPACITOR	CKSQYB472K50
	C202, 206	CERAMIC CAPACITOR	CKSQYB103K50
	C212	CERAMIC CAPACITOR	CKSQYB103K50
	C216, 217	ELECTR. CAPACITOR	CEAS33□0M16
	C301	CERAMIC CAPACITOR	CKSQYB104K25
	C302	ELECTR. CAPACITOR	CEAS33□0M16
	C304	CERAMIC CAPACITOR	CKSQYB104K25
	C306	CERAMIC CAPACITOR	CKSQYB152K50
	C307	CERAMIC CAPACITOR	CKSQYB473K25
	C308	CERAMIC CAPACITOR	CKSQYB103K50
	C309	ELECTR. CAPACITOR	CEASR□ 7M50
	C31-33	ELECTR. CAPACITOR	CEAS33□0M16
	C34	ELECTROLYTIC CAPACIT	CEAS47 1M6R3
	C351	ELECTR. CAPACITOR	CEAS33□0M16
	C353	CHIP CAPACITOR	CKSQYF103Z50
	C354, 356	CERAMIC CAPACITOR	CKSQYB103K50
	C361	CHIP CAPACITOR	CKSQYF103Z50
	C375	CERAMIC CAPACITOR	CKSQYB103K50

Mark	No.	Description	Part No.
	C403, 404	CERAMIC CAPACITOR	CCSQCH470J50
	C41	CERAMIC CAPACITOR	CKSQYB103K50
	C410, 411	CERAMIC CAPACITOR	CKSQYB104K25
	C414-416	CERAMIC CAPACITOR	CKSQYB104K25
	C418, 419	CERAMIC CAPACITOR	CKSQYB104K25
	C42, 420	CERAMIC CAPACITOR	CKSQYB103K50
	C421	CERAMIC CAPACITOR	CKSQYB473K25
	C422, 423	CERAMIC CAPACITOR	CKSQYB104K25
	C424, 426	CERAMIC CAPACITOR	CKSQYB473K25
	C429	CERAMIC CAPACITOR	CCSQCH560J50
	C43	CERAMIC CAPACITOR	CKSQYB103K50
	C430	CERAMIC CAPACITOR	CCSQCH560J50
	C431, 432	CERAMIC CAPACITOR	CKSQYB104K25
	C433, 434	ELECTR. CAPACITOR	CEAS220M25
	C435-438	CERAMIC CAPACITOR	CCSQCH390J50
	C44	CERAMIC CAPACITOR	CKSQYB103K50
	C441, 442	CERAMIC CAPACITOR	CKSQYB152K50
RESISTORS			
	VR102	VR(22KΩ)	RCP1046
	VR103	VR(1KΩ)	RCP1044
	VR151, 152	VR(22KΩ)	RCP1046
	Other resistors		RS1/10S□□□J
OTHERS			
	CN101	CONNECTOR	52045-1610
	CN351	CONNECTOR	HLEM22S-1
	X351	CERAMIC RESONATOR(4.19MHz)	VSS1014
	X401	XTAL RES (OSC)(16.9344MHz)	PSS1006

◉ FUNCTION BOARD ASSEMBLY (PWZ2203)

SEMICONDUCTORS			
	D701-706	DIODE	1SS254
SWITCHES			
	S701-718	SWITCH	PSG1006
		(4, PROGRAM, SEARCH(|◁◁/◁◁), 5, EJECT, PLAY/PAUSE, 2, RANDOM, REPEAT, 6, SEARCH (▷▷/▷▷|), STOP, 1, TIME, HI -LITE SCAN, 3, COMPU PGM, DELETE)	
	S751	PUSH SWITCH(POWER)	PSG1007
RESISTORS			
	R701-704		RD1/6PM4R7J
OTHERS			
	CN701	CONNECTOR	HLEM22R-1
	V701	FL INDICATOR TUBE	PEL1064

Mark	No.	Description	Part No.
POWER SUPPLY BOARD ASSEMBLY			
SEMICONDUCTORS			
⚠	IC20	REGULATOR IC	M5298P
	Q62	TRANSISTOR	2SC1740S
⚠	D11-14	DIODE	11ES2
⚠	D52	DIODE	11ES2
	D54	ZENNER DIODE	MTZJ18B
CAPACITORS			
	C11-14	CERAMIC CAPACITOR	CKCYF103Z50
	C15, 16	CERAMIC CAPACITOR	CKCYF103Z50
	C25	ELECTR. CAPACITOR	CEAS472M16
	C26	ELECTR. CAPACITOR	CEAS222M16
	C27	ELECTROLYTIC CAPACIT	CEAS102M10
	C28	ELECTR. CAPACITOR	CEAS101M10
	C52	ELECTR. CAPACITOR	CEAS101M35
	C60	ELECTR. CAPACITOR	CEAS010M50
RESISTORS			
	All resistors		RD1/6PM□□□J
CONNECTOR BOARD ASSEMBLY			
OTHERS			
	CN382	CONNECTOR(9P)	KPE9
LOADING BOARD ASSEMBLY			
SWITCHES			
	S601, 602	PUSH SWITCH (LOADING POSITION)	DSG1016
SELECT BOARD ASSEMBLY			
SWITCHES			
	S603-606	PUSH SWITCH (MAGAZINE, DISC POSITION)	DSG1016

MOTOR BOARD ASSEMBLY

There is not supplied parts in this assembly.

6. ADJUSTMENTS

6.1. Adjustment Methods

If a disc player is adjusted incorrectly or inadequately, it may malfunction or not work at all even though there is nothing at all wrong with the pickup or the circuitry. Adjust correctly following the adjustment procedure.

● Adjustment Items/Verification Items and Order

Step	Item	Test Point	Adjustment Location
1	Focus offset adjustment	TP1, Pin 6 (FCS. ERR)	VR103 (FCS. OFS)
2	Grating adjustment	TP1, Pin 2 (TRK. ERR)	Grating adjustment slit
3	Tracking error balance adjustment	TP1, Pin 2 (TRK. ERR)	VR102 (TRK. BAL)
4	Pickup radial/tangential direction tilt adjustment	TP1, Pin 1 (RF)	Radial tilt adjustment screw, Tangential tilt adjustment screw
5	RF level adjustment	TP1, Pin 1 (RF)	VR1 (RF level)
6	Focus servo loop gain adjustment	TP1, Pin 5 (FCS. IN) TP1, Pin 6 (FCS. ERR)	VR152 (FCS. GAN)
7	Tracking servo loop gain adjustment	TP1, Pin 3 (TRK. IN) TP1, Pin 2 (TRK. ERR)	VR151 (TRK. GAN)
8	Focus error signal verification	TP1, Pin 6 (FCS. ERR)	————

● **Abbreviation table**

FCS. ERR :Focus Error
FCS. OFS :Focus Offset
TRK. ERR :Tracking Error
TRK. BAL :Tracking Balance
FCS GAN :Focus Gain
TRK GAN :Tracking Gain
FCS. IN :Focus In
TRK. IN :Tracking In

● Measuring Instruments and Tools

1. Dual trance oscilloscope (10:1 probe)
2. Low-frequency oscillator
3. Test disc (YEDS-7)
4. Low-pass filter (39 kΩ + 0.001 μF)
5. Resistor (100 kΩ)
6. Standard tools

● Test Point and Adjustment Variable Resistor Positions

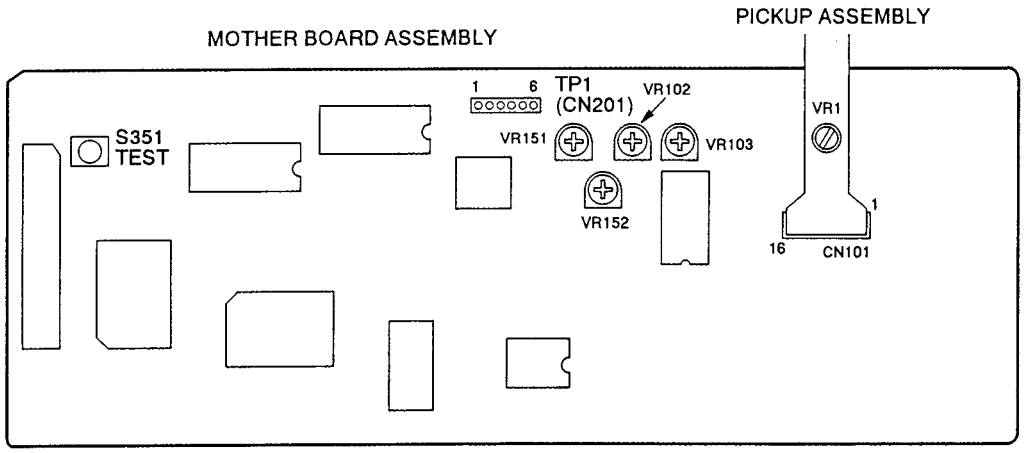


Figure 1 Adjustment Locations

● Notes

1. Use a 10:1 probe for the oscilloscope.
2. All the knob positions (settings) for the oscilloscope in the adjustment procedures are for when a 10:1 probe is used.

● Test Mode

These models have a test mode so that the adjustments and checks required for service can be carried out easily. When these models are in test mode, the keys on the front panel work differently from normal. Adjustments and checks can be carried out by operating these keys with the correct procedure. For these models, all adjustments are carried out in test mode.

[Setting these models to test mode]

How to set this model into test mode.

1. Turn off the power switch.
2. Press the TEST mode switch (S351). (See Figure 1.)
3. Turn on the power switch.

When the test mode is set correctly, the display is different from what it usually is when the power is turned on. If the display is still the same as usual, test mode has not been set correctly, so repeat Steps 1 – 3.

[Release from test mode]

Here is the procedure for releasing the test mode:

1. Press the STOP key and stop all operations.
2. Turn off the power switch on the front panel.

[Operations of the keys in test mode]

Code	Key Name	Function in Test Mode	Explanation
	PROGRAM	Focus servo close	The laser diode is lit up and the focus actuator is lifted up, then lowered slowly and the focus servo is closed at the point where the objective lens is focused on the disc. With the player in this state, if you lightly rotate the stopped disc by hand, you can hear the sound the focus servo. If you can hear this sound, the focus servo is operating correctly. If you press this key with no disc mounted, the laser diode lights up, the focus actuator is pulled up, then the actuator is lowered and raised twice and returned to its original position.
▷ /□□	PLAY/ PAUSE	Spindle servo ON	Starts the spindle motor in the clockwise direction and when the disc rotation reaches the prescribed speed (about 500 rpm at the inner periphery), sets the spindle servo in a closed loop. Be careful. Pressing this key when there is no disc mounted makes the spindle motor run at the maximum speed. If the focus servo does not go correctly into a closed loop or the laser light shines on the mirror section at the outermost periphery of the disc, the same symptom is occurred.
▷ /□□	PLAY/ PAUSE	Tracking servo close/open	Pressing this key when the focus servo and spindle servo are operating correctly in closed loops puts the tracking servo into a closed loop, displays the track number being played back and the elapsed time on the front panel, and outputs the playback signal. If the elapsed time is not displayed or not counted correctly or the audio is not played back correctly,it may be that the laser is shining on the section with no sound recorded at the outer edge of the disc, that something is out of adjustment, or that there is some other problem. This key is a toggle key and open/close the tracking servo alternately. This key has no effect if no disc is mounted.

Code	Key Name	Function in Test Mode	Explanation
⏮ / ◁◁	MANUAL/ TRACK SEARCH REV	Carriage reverse (inwards)	Moves the pickup position toward the inner diameter of the disc. When this key is pressed with the tracking servo in a closed loop, the tracking servo automatically goes into an open loop. Since the motor does not automatically stop at the mechanical end point in test mode, be careful with this operation.
▷▷ / ⏭	MANUAL/ TRACK SEARCH FWD	Carriage forward (outwards)	Moves the pickup position toward the outer diameter of the disc. When this key is pressed with the tracking servo in a closed loop, the tracking servo automatically goes into an open loop. Since the motor does not automatically stop at the mechanical end point in test mode, be careful with this operation.
□	STOP	Stop	Initializes and the disc rotation stops. The pickup and disc remain where they are when this key is pressed.
⏏	EJECT	CD magazine eject	Stores Disc 1 in the CD magazine, then ejects the CD magazine. However, even though the CD magazine is ejected, the pickup does not return to the park position. Even if the CD magazine is mounted again, the pickup remains where it is.

Note : When inserting the magazine, disc 1 of the magazine is loaded automatically.

[How to play back a disc in test mode]

In test mode, since the servos operate independently, playing back a disc requires that you operate the keys in the correct order to close the servos.
Here is the key operation sequence for playing back a disc in test mode.

PROGRAM	Lights up the laser diode and closes the focus servo.
⇩	
PLAY/PAUSE ▷/II	Starts the spindle motor and closes the spindle servo.
⇩	
PLAY/PAUSE ▷/II (Press the ▷/II key twice)	Closes the tracking servo.

Wait at least 2-3 seconds between each of these operations.

1. Focus Offset Adjustment

● Objective ● Symptom when out of adjustment	Sets the DC offset for the focus error amp. The model does not focus in and the RF signal is dirty.		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 6 (FCS. ERR) [Settings] 5 mV/division 10 ms/division DC mode	● Player state ● Adjustment location ● Disc	Test mode, stopped (just the Power switch on) VR103 (FCS. OFS) None needed

[Procedure]

Adjust VR103 (FCS. OFS) so that the DC voltage at TP1, Pin 6 (FCS. ERR) is -150 ± 50 mV.

2. Grating Adjustment

● Objective ● Symptom when out of adjustment	To align the tracking error generation laser beam spots to the optimum angle on the track. Play does not start, track search is impossible, tracks are skipped.		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 2 (TRK. ERR) via a low pass filter. (See Figure 2) [Settings] 50 mV/division 5 ms/division DC mode	● Player state ● Adjustment location ● Disc	Test mode, focus and spindle servos closed and tracking servo open Pickup grating adjustment slit YEDS-7

[Procedure]

1. Move the pickup to midway across the disc (R=35mm) with the MANUAL/TRACK SEARCH FWD ▷▷/▷▷| or REV |◁◁/◁◁ key.
2. Press the PROGRAM key, then the PLAY/PAUSE ▷/II key in that order to close the focus servo then the spindle servo.
3. Insert an ordinary screwdriver into the grating adjustment slit and adjust the grating to find the null point. For more details, see the next page.
4. If you slowly turn the screwdriver clockwise from the null point, the amplitude of the wave gradually increases, then if you continue turning the screwdriver, the amplitude of the wave becomes smaller again. Turn the screwdriver clockwise from the null point and set the grating to the first point where the wave amplitude reaches its maximum.
   Reference : Figure 3 shows the relation between the angle of the tracking beam with the track and the waveform.

   Note : The amplitude of the tracking error signal is about 3 Vp-p (when a 39 kΩ + 0.001 μF low pass filter is used). If this amplitude is extremely small (2 Vp-p or less), the objective lens or the pickup malfunction may be the cause. If the difference between the amplitude of the error signal at the innermost edge and outermost edge of the disc is more than 10%, the grating is not adjusted to the optimum point, so adjust it again.
5. Return the pickup to more or less midway across the disc with the MANUAL/TRACK SEARCH REV |◁◁/◁◁ key, press the PLAY/PAUSE ▷/II key and double check that the track number and elapsed time are displayed on the front panel. If they are not displayed at this time or the elapsed time changes irregularly, double check the null point and adjust the grating again.

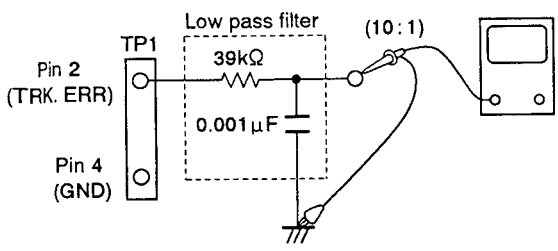
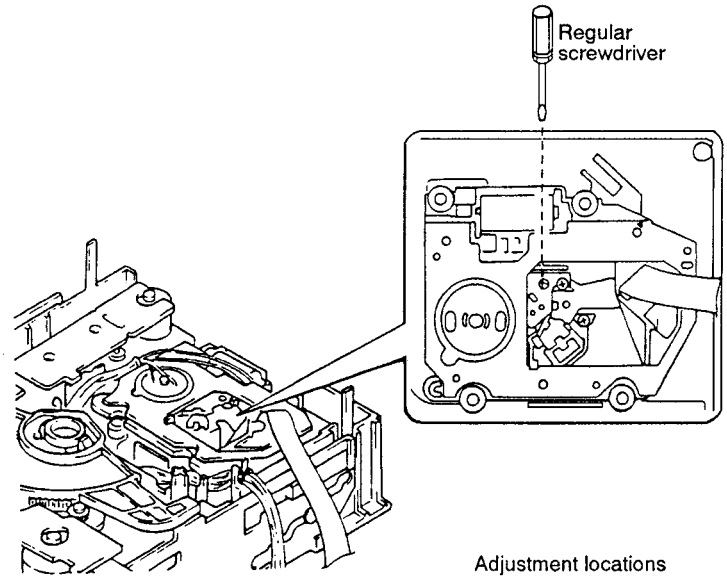


Figure 2



Adjustment locations

[How to find the null point]

When you insert the regular screwdriver into the slit for the grating adjustment and change the grating angle, the amplitude of the tracking error signal at TP1, Pin 2 changes. Within the range for the grating, there are five or six locations where the amplitude of the wave reaches a minimum. Of these five or six locations, there is only one at which the envelope of the waveform is smooth. This location is where the three laser beams divided by the grating are all right above the same track. (See Figure 3.)
This point is called the null point. When adjusting the grating, this null point is found and used as the reference position.

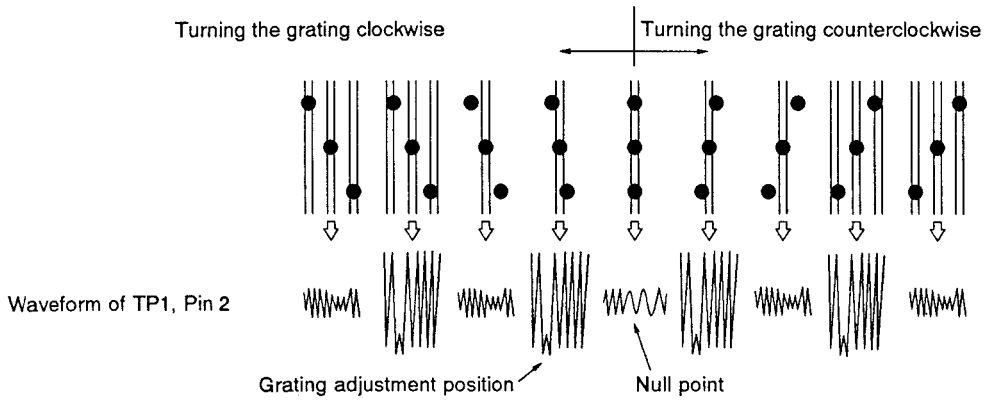
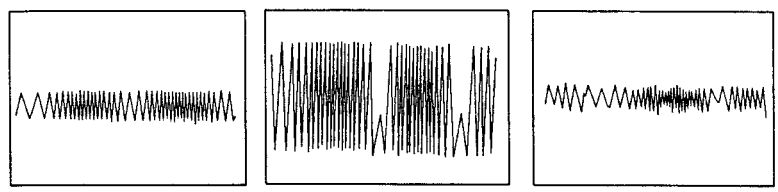


Figure 3



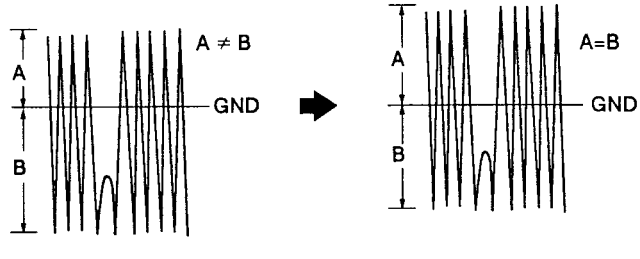
Null point waveform | Maximum amplitude waveform | Waveform other than the null point

3. Tracking Error Balance Adjustment

● Objective ● Symptom when out of adjustment	To correct for the variation in the sensitivity of the tracking photodiode. Play does not start or track search is impossible.		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 2 (TRK. ERR). This connection may be via a low pass filter. [Settings] 50 mV/division 5 ms/division DC mode	● Player state ● Adjustment location ● Disc	Test mode, focus and spindle servos closed and tracking servo open VR102 (TRK. BAL) YEDS-7

[Procedure]

1. Move the pickup to midway across the disc (R=35 mm) with the MANUAL/TRACK SEARCH FWD ▷▷ / ▷▷| or REV |◁◁ / ◁◁ key.
2. Press the PROGRAM key, then the PLAY/PAUSE ▷ / ❙❙ key in that order to close the focus servo then the spindle servo.
3. Line up the bright line (ground) at the center of the oscilloscope screen and put the oscilloscope into DC mode.
4. Adjust VR102 (TRK. BAL) so that the positive amplitude and negative amplitude of the tracking error signal at TP1, Pin 2 (TRK. ERR) are the same (in other words, so that there is no DC component).



When there is a DC component

When there is no DC component

4. Pickup Radial/Tangential Tilt Adjustment

● Objective	To adjust the angle of the pickup relative to the disc so that the laser beams are shone straight down into the disc for the best read out of the RF signals.		
● Symptom when out of adjustment	Sound broken;some discs can be played but not others.		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 1 (RF). [Settings] 20 mV/division 200 ns/division AC mode	● Player state ● Adjustment location ● Disc	Test mode, play Pickup radial tilt adjustment screw and tangential tilt adjustment screw YEDS-7

[Procedure]

1. Press the MANUAL/TRACK SEARCH FWD ▷▷ / ▷▷| or REV |◁◁ / ◁◁ key to move the pickup to halfway across the disc (R=35mm).
   Press the PROGRAM key, the PLAY/PAUSE ▷ / ❚❚ key, then the PLAY/PAUSE ▷ / ❚❚ key (press the ▷ / ❚❚ key twice) in that order to close the respective servos and put the player into play mode.
2. First, adjust the radial tilt adjustment screw with a Phillips screwdriver so that the eye pattern (the diamond shape at the center of the RF signal) can be seen the most clearly.
3. Next, adjust the tangential tilt adjustment screw with a Phillips screwdriver so that the eye pattern (the diamond shape at the center of the RF signal) can be seen the most clearly (Figure 5).
4. Adjust the radial tilt adjustment screw and the tangential tilt adjustment screw again so that the eye pattern can be seen the most clearly. As necessary, adjust the two screws alternately so that the eye pattern can be seen the most clearly.

Note:Radial and tangential mean the directions relative to the disc shown in Figure 4.

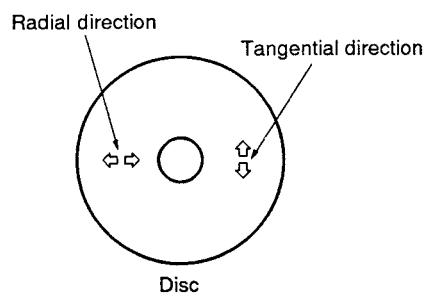
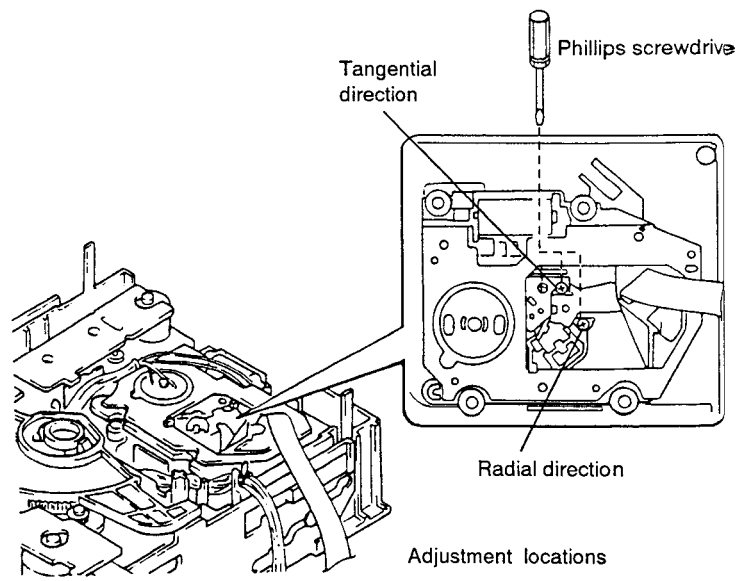


Figure 4



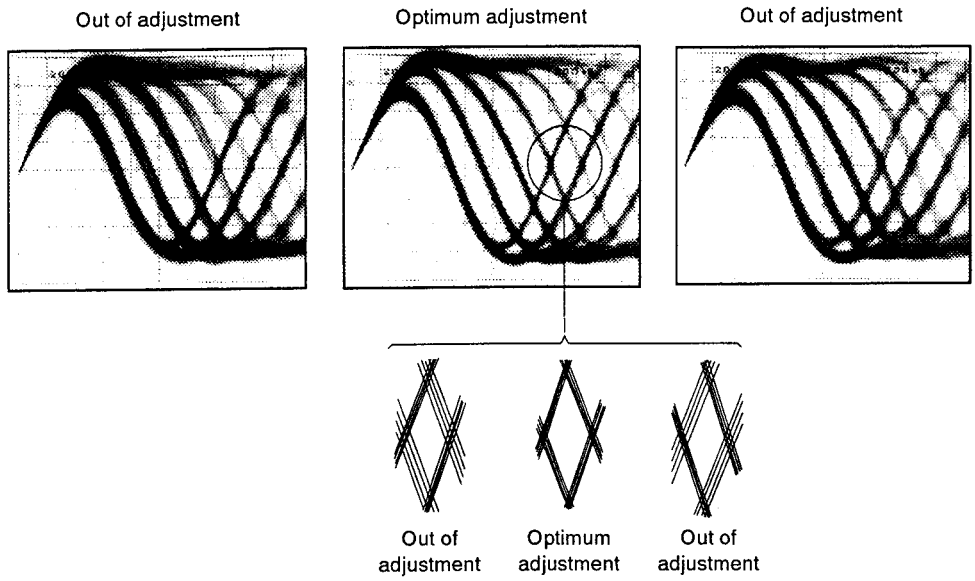


Figure 5 Eye pattern

5. RF Level Adjustment

● Objective	To optimize the playback RF signal amplitude		
● Symptom when out of adjustment	No play or no search		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 1 (RF). [Settings] 50 mV/division 10 ms/division AC mode	● Player state ● Adjustment location ● Disc	Test mode, play VR1(laser power) YEDS-7

[Procedure]

1. Move the pickup to midway across the disc (R=35 mm) with the MANUAL/TRACK SEARCH FWD ▷▷ / ▷▷| or REV|◁◁ /◁◁ key, then press the PROGRAM key, the PLAY/PAUSE ▷/II key, then the PLAY/PAUSE ▷/II key (press the ▷/II key twice) in that order to close the respective servos and put the player into play mode.
2. Adjust VR1 (laser power) so that the RF signal amplitude is 1.2 Vp-p ± 0.1 V.

6. Focus Servo Loop Gain Adjustment

● Objective	To optimize the focus servo loop gain.		
● Symptom when out of adjustment	Playback does not start or focus actuator noisy.		
● Measurement instrument connections	See figure 6. [Settings] CH1 CH2 20 mV/division 5 mV/division X-Y mode	● Player state ● Adjustment location ● Disc	Test mode, play VR152 (FCS. GAN) YEDS-7

[Procedure]

1. Set the AF generator output to 1.2 kHz and 1 Vp-p.
2. Press the MANUAL/TRACK SEARCH FWD ▷▷ / ▷▷| or REV |◁◁ / ◁◁ key to move the pickup to halfway across the disc (R=35 mm), then press the PROGRAM key, the PLAY/PAUSE ▷ / ❙❙ key, then the PLAY/PAUSE ▷ / ❙❙ key (press the ▷ / ❙❙ key twice) in that order to close the corresponding servos and put the player into play mode.
3. Adjust VR152 (FCS. GAN) so that the Lissajous waveform is symmetrical about the X axis and the Y axis.

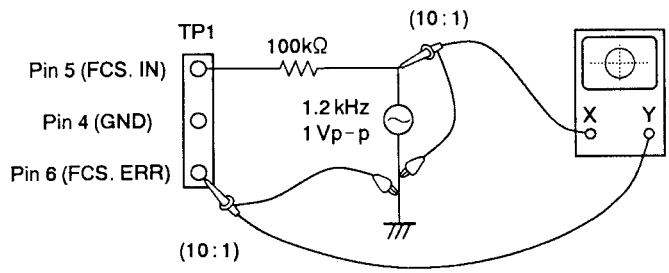
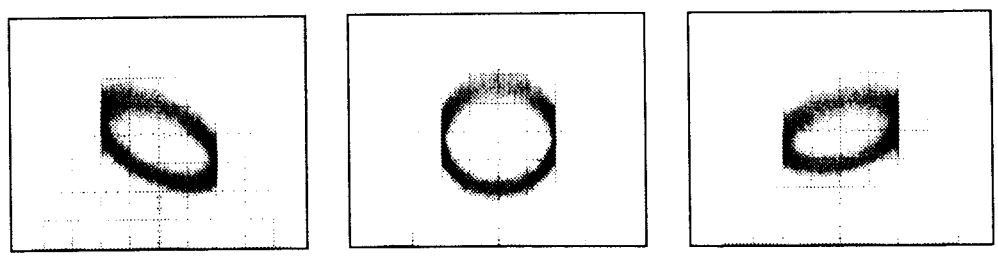


Figure 6

Focus Gain Adjustment



Higher gain | Optimum gain | Lower gain

7. Tracking Servo Loop Gain Adjustment

● Objective	To optimize the tracking servo loop gain.		
● Symptom when out of adjustment	Playback does not start, during searches the actuator is noisy, or tracks are skipped.		
● Measurement instrument connections	See Figure 7. [Settings] CH1 CH2 50 mV/division 50 mV/division X-Y mode	● Player state ● Adjustment location ● Disc	Test mode, play VR151 (TRK. GAN) YEDS-7

[Procedure]

1. Set the AF generator output to 1.2 kHz and 2 Vp-p.
2. Press the MANUAL/TRACK SEARCH FWD ▷▷ / ▷▷| or REV |◁◁ / ◁◁ key to move the pickup to halfway across the disc (R=35 mm), then press the PROGRAM key, the PLAY/PAUSE ▷/II key, then the PLAY/PAUSE ▷/II key (press the ▷/II key twice) in that order to close the corresponding servos and put the player into play mode.
3. Adjust VR151 (TRK. GAN) so that the Lissajous waveform is symmetrical about the X axis and the Y axis.

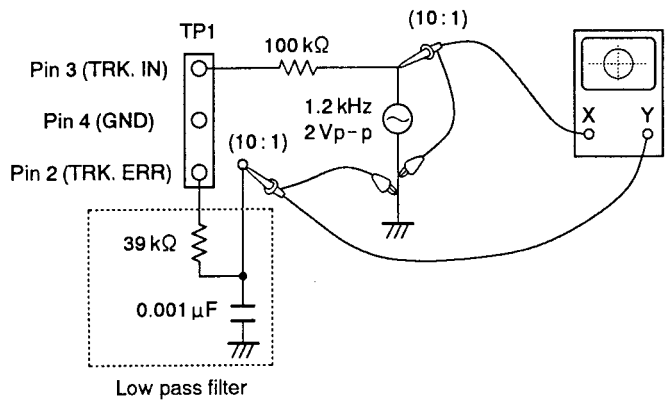
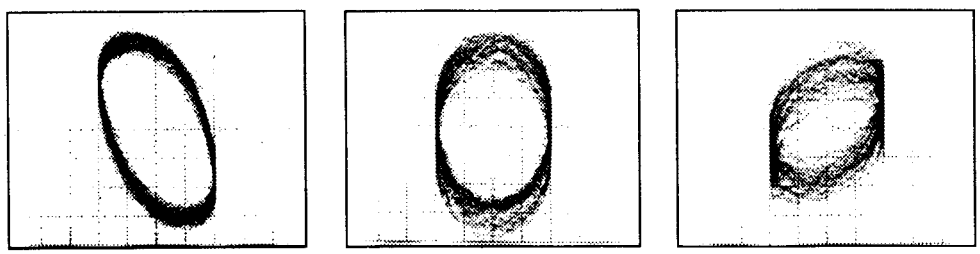


Figure 7

Tracking Gain Adjustment



Higher gain | Optimum gain | Lower gain

8. Focus Error Signal (Focus S Curve) Verification

● Objective ● Symptom when out of adjustment	To judge whether the pickup is ok or not by observing the focus error signal. The pickup is judged from the amplitude of the tracking error signal (as discussed in the section on adjusting the tracking error balance) and the waveform for the focus error signal.		
● Measurement instrument connections	Connect the oscilloscope to TP1, Pin 6 (FCS. ERR). [Settings] 100 mV/division 5 ms/division DC mode	● Player state ● Adjustment location ● Disc	Test mode, stop None YEDS-7

[Procedure]

1. Connect TP1 Pin 5 to ground.
2. Mount the disc.
3. While watching the oscilloscope screen, press the PROGRAM key and observe the waveform in Figure 8 for a moment. Verify that the amplitude is at least 2.5 Vp-p and that the positive and negative amplitude are about equal. Since the waveform is only output for a moment when the PROGRAM key is pressed, press this key over and over until you have checked the waveform.

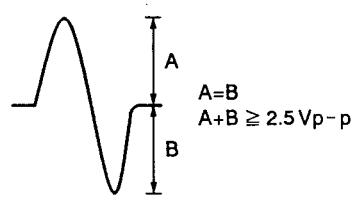


Figure 8

[Judging the pickup]

Do not judge the pickup until all the adjustment have been made correctly. In the following cases, there may be something wrong with the pickup.

1. The tracking error signal amplitude is extremely small (less than 2 Vp-p).
2. The focus error signal amplitude is extremely small (less than 2.5 Vp-p).
3. The positive and negative amplitudes of the focus error signal are extremely asymmetrical (2 : 1 ratio or more).
4. The RF signal is too small (less than 0.8 Vp-p) and even if VR1 (laser power) is adjusted , the RF signal can not be brought up to the standard level.

6. REGLAGES

6.1 Méthodes de Réglage

Si le lecteur CD est mal réglé, il risque de ne plus fonctionner normalement, voire ne plus fonctionner du tout, même si le capteur et la circuiterie en présentent aucune anomalie. Par conséquent, ajuster le lecteur correctement en suivant les démarches de réglage.

● Points de Réglage/Point et Ordre de Vérification

Etape	Point	Point d'Essai	Emplacement du Réglage
1	Réglage du décalage de la mise au point	TP1, Broche 6 (FCS. ERR)	VR103 (FCS. OFS)
2	Réglage du réseau de diffraction	TP1, Broche 2 (TRK. ERR)	Fente de réglage du réseau de diffraction
3	Réglage d'équilibrage d'erreur d'alignement	TP1, Broche 2 (TRK. ERR)	VR102 (TRK. BAL)
4	Réglage d'inclinaison radiale/ tangentielle du capteur	TP1, Broche 1 (RF)	Vis de réglage d'inclinaison radiale, vis de réglage d'inclinaison tangentielle
5	Réglage du niveau RF	TP1, Broche 1 (RF)	VR1 (niveau RF)
6	Réglage de gain de bouncle asservie de la mise au point	TP1, Broche 5 (FCS. IN) TP1, Broche 6 (FCS. ERR)	VR152 (FCS. GAN)
7	Réglage de gain de boucle asservie de l'alignement	TP1, Broche 3 (TRK. IN) TP1, Broche 2 (TRK. ERR)	VR151 (TRK. GAN)
8	Vérification du signal d'erreur de la mise au point	TP1, Broche 6 (FCS. ERR)	————

● Tableau des abbréviations

FCS. ERR :Erreur de mise au point
FCS. OFS :Décalage de mise au point
TRK. ERR :Erreur d'alignement
TRK. BAL :Équilibrage d'erreur d'alignement
FCS GAN :Gain de mise au point
TRK GAN :Gain d'alignement
FCS. IN :Mise au point correcte
TRK. IN :Alignement correct

● Intruments de Mesure et Outils

1. Oscilloscope cathodeique à deux faisceaux (sonde 10 : 1)
2. Oscillateur de basse fréquence
3. Disque d'essai (YEDS-7)
4. Filtre passe-bas (39 kΩ + 0.001 μF)
5. Résistance (100 kΩ)
6. Outils conventionnels

● Point d'Essai et Positions de Réglage de la Résistance Variable

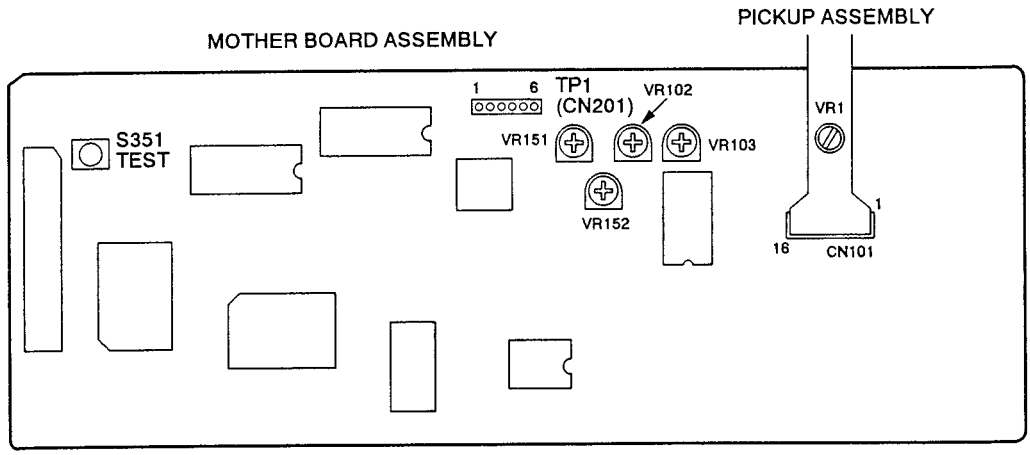


Figure 1 Emplacement des réglages

● Remarques

1. Utiliser une sonde 10:1 pour l'oscilloscope.
2. Toutes les positions (réglages) des boutons de l'oscilloscope, dans les démarches de réglage, sont conçues pour l'usage d'une sonde 10:1.

● Mode d'Essai

Ces modèles sont munis d'un mode d'essai, de façon que les réglages requis à la réparation puissent être effectués aisément. Quand ces modèles sont en mode d'essai, les touches du panneau avant ne fonctionnent pas comme à l'ordinaire. Les réglages et les vérifications peuvent s'effectuer par l'enclenchement de ces touches, à conditions de suivre les démarches requises. Dans le cas de ces modèles, tous les réglages sont réalisés en mode d'essai.

[Mise en Mode d'Essai]

Voici la menière de mettre le modèle en mode d'essai.
1.Commuter l'interrupteur d'alimentation sur arrêt.
2. Appuyer sur la touche TEST (S351). (Voir Figure 1.)
3.Commuter l'interrupteur d'alimentation sur marche.

Quand le mode d'essai est correctement réglé, l'affichage est différent de celui qui apparaît généralement à la mise souns tension. Si l'affichage reste le même, le mode d'essai n'a pas été réglé correctement. Dans ce cas, répéter les étapes 1 à 3.

[Pour sortir du mode d'essai]

Voici la procédure pour sortir du mode d'essai.

1. Appuyer sur la touche STOP pour arrêter toutes les opérations.
2. Sur le panneau avant, commuter l'interrupteur d'alimentation sur arrêt.

[Fonctionnement des touches en mode d'essai]

Code	Nom de la Touche	Fonction en Mode d'Essai	Explications
	PROGRAM	Fermeture du circuit asservi de la mise au point	La diode laser s'allume et l'actuateur de la mise au point se relève, puis s'abaisse lentement et le circuit servo de la mise au point se ferme au point où la lentille de l'objectif se focalise sur le disque. Quand l'appareil est dans cet état, si l'on fait légèrement tourner à la main le disque arrêté, le bruit produit par le circuit servo de la mise au point sera audible. Si ce bruit est perçu, le circuit servo de la mise au point fonctionne correctement. Si cette touche est enclenchée et qu'aucun disque n'est installé, la diode laser s'allume, l'actuateur de la mise au point se soulève, se relève, puis s'abaisse et se soulève une deuxième fois et enfin, revient à sa position de départ.
▷ /□□	PLAY/ PAUSE	Asservissement de rotation en service	Démarre le moteur de rotation dans le sens des aiguilles d'une montre, quand la rotation du disque atteint la vitesse prescrite (environ 500 tours/min à la circonférence interne) et place le circuit servo de rotation dans une boucle fermée. Attention. Si cette touche est enfoncée et qu'un disque n'est pas installé, le moteur de rotation va tourner à la vitesse maximum. Si le circuit servo de la mise au point ne passe pas comme prévu dans une boucle fermée ou que la diode laser brille dans le miroir à la périphérie externe du disque, le même symptôme se produit.
▷ /□□	PLAY/ PAUSE	Ouverture/Fermeture du circuit servo de l'alignement	Le fait d'appuyer sur cette touche quand le circuit servo de la mise au point et de la rotation fonctionnent correctement en boucles fermées, place le circuit servo de l'alignement dans une boucle fermée, fait apparaître, sur le panneau avant, le numéro de la piste en coures de lecture et la durée écoulée, puis sort le signal de lecture. Si la durée écoulée n'est pas affichée ou n'est pas correctement calculée, ou si la reproduction sonore est anormale, il se peut que la diode laser s'active dans la section dépourvue de signaux enregistrés, au bord externe du disque, qu'un ajustement quelconque soit déréglé, ou qu'un autre problème se manifeste. Cette touche est de type à bascule, et ouvre/ferme alternativement le circuit servo de l'alignement. Cette touche est inopérante si un disque n'est pas installé.

Code	Nom de la Touche	Founction en Mode d'Essai	Explications
⏮ / ◁◁	MANUAL/ TRACK SEARCH REV	Inversion du chariot (vers l'intérieur)	Déplace le capteur vers la périphérie interne du disque. Quand cette touche est enclenchée et que le circuit servo de l'alignement travaille en boucle fermée, celui-ci change automatiquement dans une boucle ouverte. Comme le capteur ne s'arrête pas automatiquement au point de fin mécanique du mode d'essai, effectuer cette démarche avec précaution.
▷▷ / ⏭	MANUAL/ TRACK SEARCH FWD	Inversion du chariot (vers l'extérieur)	Déplace le capteur vers la périphérie externe du disque. Quand cette touche est enclenchée et que le circuit servo de l'alignement travaille en boucle fermée, celui-ci change automatiquement dans une boucle ouverte. Comme le capteur ne s'arrête pas automatiquement au point de fin mécanique du mode d'essai, effectuer cette démarche avec précaution.
□	STOP	Arrêt	Initialiser et la rotation du disque s'arrête. Le capteur et le disque ne bougnet pas lorsque cette touche est enclenchée.
⏏	EJECT	Ejection du magasin à disques	Range le disque n°1 dans le magasin à disques, puis éjecte celui-ci. Cependant, bien que le magasin soit éjecté, le capteur ne revient pas sur sa position de départ. Même si le magasin à disques est réinstallé, la position du capteur reste inchangée.

Remarque : Lors de l'insertion du magasin, le disque 1 est chargé automatiquement.

[Lecture de disque en mode d'essai]

En mode d'essai, comme les circuits servo fonctionnent de manière indépendante, la lecture d'un disque exige que les touches soient enclenchées dans l'ordre prescrit, afin de fermer les circuits servo.
Voici l'ordre d'enclenchement des touches pour reproduire un disque en mode d'essai.

PROGRAM	Allume la diode laser ferme le circuit servo de la mise au point.
⇩	
PLAY/PAUSE ▷/II	Démarre le moteur de rotation et ferme le circuit servo de la rotation.
⇩	
PLAY/PAUSE ▷/II (Deux fois sur la touche ▷/II)	Ferme le circuit servo de l'alignement.

Attendre 2 à 3 secondes entre chaque opération.

1. Réglage du Décalage de la Mise au Point

• Objectif	Règle le décalage CC de l'amplificateur d'erreur de mise au point.		
• Symptôme quand déréglé	Le lecteur ne procède plus à la mise au point et le signal RF n'est pas clair.		
• Raccordement des instruments de mesure	Raccorder l'oscilloscope à TP1, broche 6 (FCS. ERR). [Réglages] 5 mV/division 10 ms/division mode CC	• Etat du lecteur	Mode d'essai, arrêté (juste l'interrupteur d'alimentation commuté sur marche)
		• Emplacement du réglage	VR103(FCS. OFS)
		• Disque	Aucun requis

[Marche à suivre]

Ajuster VR103 (FCS. OFS) de façon que la tension à TP1 broche 6 (FCS. ERR) soit - 150 ± 50 mV.

2. Réglage du Réseau de Diffraction

● Objectif	Pour aligner les points du rayon laser producteur d'erreur d'alignement sur l'angle optimum de la piste.		
● Symptôme quand déréglé	La lecture ne commence pas, la recherche de piste est impossible, les pistes sont sautées.		
● Raccordement des instruments de mesure	Raccorder l'oscilloscope à TP1, broche 2 (TRK. ERR) via un filtre passe-bas. (Voir Figure 2) [Réglages] 50 mV/division 5 ms/division mode CC	● Etat du lecteur ● Emplacement du réglage ● Disque	Mode d'essai, circuits servo de la mise au point et de la rotation fermés, circuit servo de l'alignement ouvert. Fente de réglage du réseau de diffraction du capteur. YEDS-7

[Marche à suivre]

1. Déplacer le capteur à mi-chemin sur le disque (R=35 mm) par la touche MANUAL/TRACK SEARCH FWD ▷▷ / ▷▷| ou la touche REV |◁◁ / ◁◁ .
2. Appuyer sur la touche PROGRAM, puis sur la touche PLAY/PAUSE ▷ / ||, dans cet ordre, pour fermer le circuit servo de la mise au point, puis celui de la rotation.
3. Insérer un tournevis ordinaire dans le réseau de diffraction pour trouver le point zéro. Pour plus de détails, voir page suivante.
4. Si l'on tourne lentement le tournevis dans le sens des aiguilles d'une montre à partir du point zéro, l'amplitude de l'onde augmente graduellement et si l'on continue à tourner le tournevis, l'amplitude de l'onde diminue de nouveau. Tourner le tournevis dans le sens des aiguilles d'une montre à paritir du point zéro et régler le réseau de diffraction au premier point oú l'amplitude de l'onde atteint son maximum.
   Référence: La Figure 3 illustre la relation entre l'angle du faisceau de l'alignement et la piste et la forme d'onde.

   Remarque: L'amplitude du signal d'erreur d'alignement se situe aux environs de 3 Vc-c (quand un filtre passe-bas de 39 kΩ ±0,001 μF est utilisé). Si cette amplitude est extrêmement petite (2 Vc-c ou moins), il peut s'ensuivre un mauvais fonctionnement de la lentille d'objectif ou du capteur. Si la différence entre l'amplitude du signal d'erreur au bord le plus intérieur et au bord le plus extérieur du disque est supérieure à 10%, ceci signifie que le réseau de diffraction n'est pas réglé à son point optimum. Dans ce cas, recommencer le réglage.
5. Replacer le capteur plus ou moins à mi-chemin sur le disque par la touche MANUAL/TRACK SEARCH REV |◁◁ / ◁◁ , appuyer sur la touche PLAY/PAUSE ▷ / || et vérifier que le numéro de piste et la durée écoulée sont affichés sur le panneau avant. Si ces paramètres 'apparaissent pas ce moment, ou que la durée écoulée change de manière irrégulière, vérifier le point zéro et recommencer le réglage du réseau de diffraction.

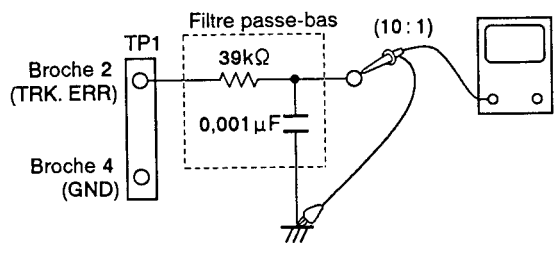
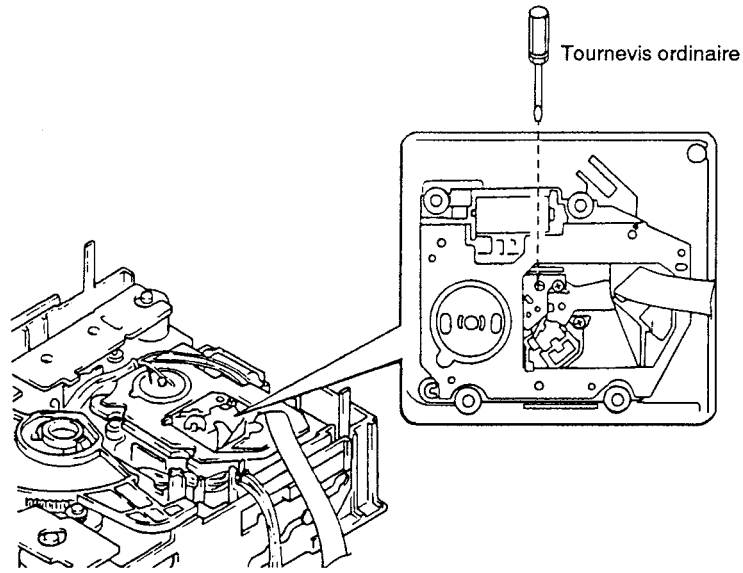


Figure 2



Emplacement des réglages

[Repérage du point zéro]

Quand le tournevis est introduit dans la fente de réglage du réseau de diffraction et que l'angle du réseau de diffraction est modifié, l'amplitude du signal d'erreur d'alignement à TP1, broche 2, change. Dans les limites de la plage du réseau de diffraction, il existe six emplacements où l'amplitude de l'onde atteint le minimum. Mais l'enveloppe de la forme d'onde n'est régulière qu'à un seul de ces emplacements. Ce point se situe à l'endroit où les trois rayons laser, divisés par le réseau de diffraction, se situent exactement sur la même piste (voir Figure 3).
Ce point s'appelle le point zéro. Lors du réglage du réseau de diffraction, ce point zéro est repéré et utilisé comme position de référnce.

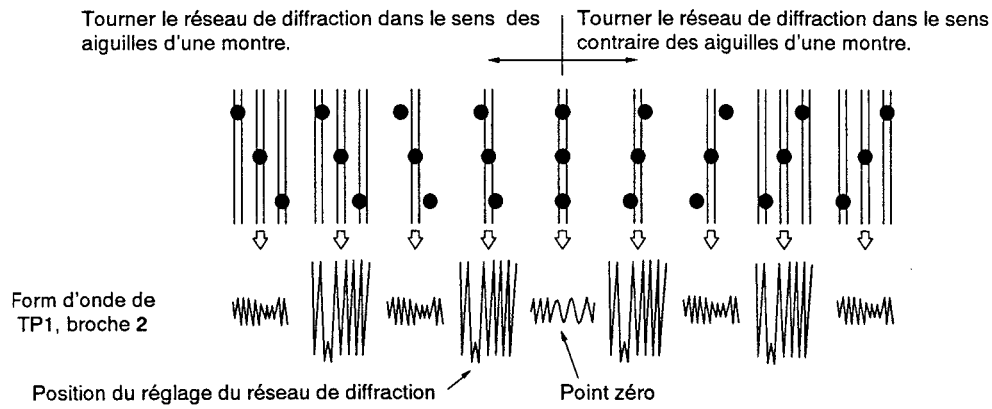
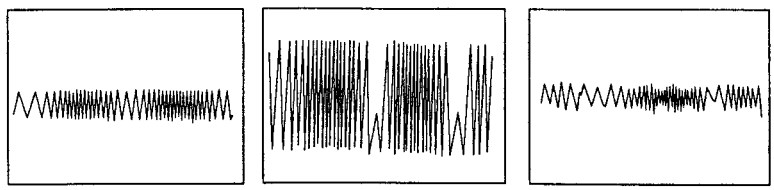

Tourner le réseau de diffraction dans le sens des aiguilles d'une montre.
Tourner le réseau de diffraction dans le sens contraire des aiguilles d'une montre.
Form d'onde de TP1, broche 2
Position du réglage du réseau de diffraction
Point zéro

Figure 3



Forme d'onde du point zéro

Forme d'onde d'amplitude maximum

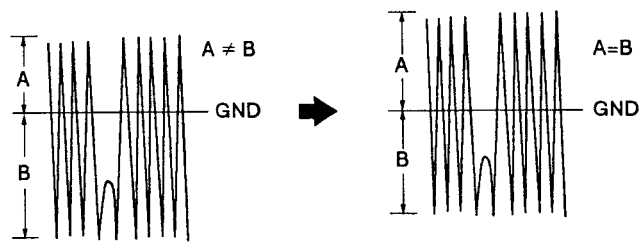
Forme d'onde autre que du point zéro

3. Réglage d'Équilibrage d'Erreur d'Alignement

● Objectif ● Symptôme quand déréglé	Pour corriger la variation de sensibilité de la photodiode d'alignement. La lecture ne commence pas, la recherche de piste est impossible.		
● Raccordement des instruments de mesure	Raccorder l'oscilloscope à TP1, broche 2 (TRK. ERR). Cette connexion peut être faite par l'intermédiaire d'un filtre passe-bas. [Réglages] 50 mV/division 5 ms/division mode CC	● Etat du lecteur ● Emplacement du réglage ● Disque	Mode d'essai, circuits servo de la mise au point et de la rotation fermés, circuit servo de l'alignement ouvert. VR102(TRK. BAL) YEDS-7

[Marche à suivre]

1. Déplacer le capteur à mi-chemin sur le disque (R=35 mm) par la touche MANUAL/TRACK SEARCH FWD ▷▷ / ▷▷| ou la touche REV |◁◁ / ◁◁ .
2. Appuyer sur la touche PROGRAM, puis sur la touche PLAY/PAUSE ▷ / ❚❚ , dans cet ordre, pour fermeer le circuit servo de la mise au point, puis celui de la rotation.
3. Aligner la ligne lumineuse (masse) au centre de l'écran de l'oscilloscope et placer celui-ci en mode CC.
4. Ajuster VR102 (TRK. BAL) de façon que l'amplitude positive et l'amplitude négative du signal d'erreur d'alignement à TP1, broche 2 (TRK. ERR) soient identiques (c'est-à-dire, qu'il n'y ait aucun composant CC).



S'il y a un composant CC　　S'il n'y a pas de composant CC

4. Réglage d'Inclinaison Radiale/Tangentielle du Capteur

• Objectif	Pour régler l'angle du capteur par rapport au disque, de façon que les rayons laser frappent vericalement le disque et permettre ainsi la lecture optimum des signaux RF.		
• Symptôme quand déréglé	Son interrompu ; certains disques peuvent être lus et pas d'autres.		
• Raccordement des instruments de mesure	Raccorder l'oscilloscope à TP1, broche 1 (RF). [Réglages] 20 mV/division 200 ns/division mode CA	• Etat du lecteur	Mode d'essai, lecture
		• Emplacement du réglage	Vis de réglage d'inclinaison radiale. Vis de réglage d'inclinaison tangentielle.
		• Disque	YEDS-7

[Marche à suivre]

1. Dans le cas d'un lecteur multidisque, utiliser la touche MANUAL/ TRACK SEARCH FWD ▷▷ / ▷▷| ou la touche REV |◁◁ / ◁◁ pour déplacer le capteur à mi-chemin sur le disque (R=35 mm).
   Appuyer sur la touche PROGRAM, PLAY/PAUSE ▷/⏸ et PLAY/PAUSE ▷/⏸ (deux fois sur la touche ▷/⏸) dans cet ordre, pour fermer les circuits servo respectifs et mettre le lecteur en mode de lecture.
2. D'abord, ajuster la vis d'inclinaison radiale à l'aide un tournevis Phillips, de façon que le motif en oeil (c'est-à-dire, le diamant au centre du signal RF) soit le plus clairement visible.
3. Ensuite, ajuster la vis d'inclinaison tangentielle à l'aide un tournevis Phillips, de façon que le motif en oeil (c'est-à-dire, le diamant au centre du signal RF) soit le plus clairement visible (Figure 5).
4. Ajuster de nouveau la vis d'inclinaison radiale et la vis d'inclinaison tangentielle de façon que le motif en oeil soit le plus clairement visible. Le cas échéant, régler les deux vis de façon que le motif en oeil soit le plus clairement visible.

Remarque: "Radial" et "tangentiel" se rapportent aux sens par rapport au disque illustré à la Figure 4.

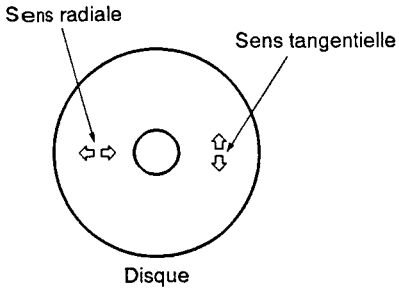
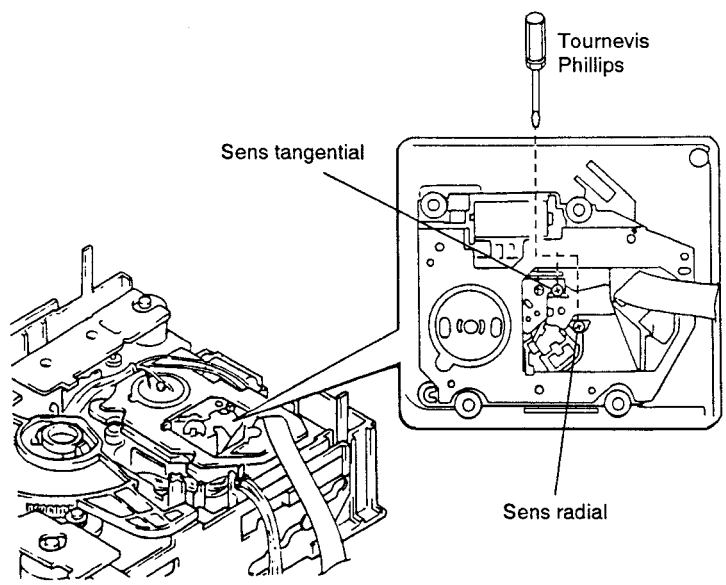


Figure 4



Emplacements des réglages

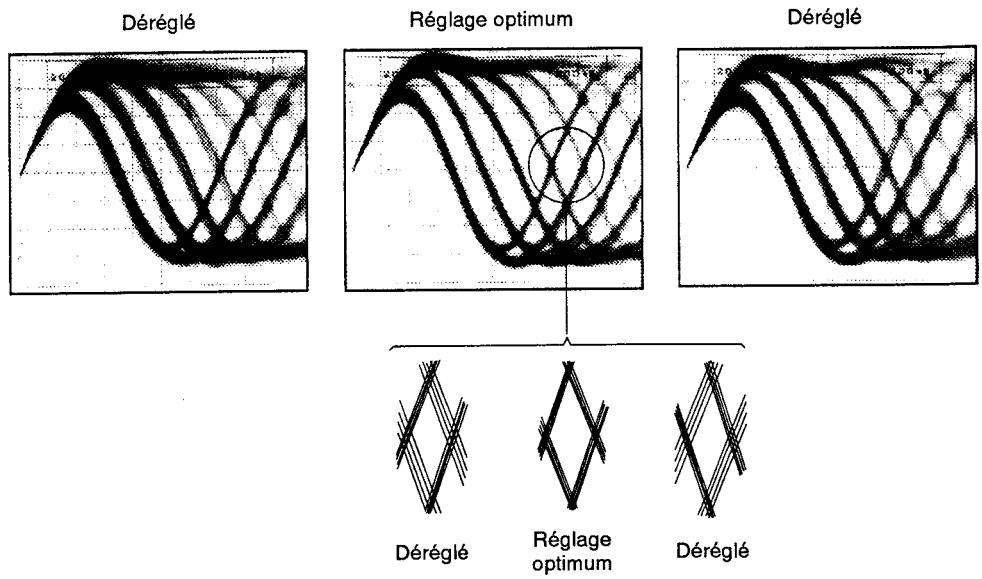


Figure 5 Motif en oeil

5. Réglage du Niveau RF (Niveau RF)

● Objectif	Pour optimaliser l'amplitude du signal RF de lecture		
● Symptôme quand déréglé	Pas de lecture ni de recherche		
● Raccordement des instruments de mesure	Raccorder l'oscilloscope à TP1, broche 1 (RF). [Réglages] 50 mV/division 10 ms/division mode CA	● Etat du lecteur ● Emplacement du réglage ● Disque	Mode d'essai, lecture VR1 (alimentation du laser) YEDS-7

[Marche à suivre]

1. Placer le capteur à mi-chemin sur le disque (R=35 mm) à l'aide de la touche MANUAL/TRACK SEARCH FWD ▷▷ / ▷▷| ou la touche REV |◁◁ / ◁◁.
   Ensuite, appuyer sur la touche PROGRAM, la touche PLAY/PAUSE ▷/II, puis sur la touche PLAY/PAUSE ▷/II (deux fois sur la touche ▷/II), dans cet ordre, pour fermer les circuits servo respectifs et mettre le lecteur en mode de lecteur.
2. Ajuster VR1 (alimentation du laser) de façon que l'amplitude du signal RF atteigne 1,2 Vc-c ± 0,1 V.

6. Réglage de Gain de Boucle Asservie de la Mise au Point

• Objectif	Pour optimaliser le gain de la boucle d'asservissement de la mise au point.		
• Symptôme quand déréglé	La lecture ne commence pas ou l'actuateur de la mise au point est parasité.		
• Raccordement des instruments de mesure	Voir Figure 6. [Réglages] GAN. 1 GAN. 2 20 mV/division 5mV/division mode X-Y	• Etat du lecteur • Emplacement du réglage • Disque	Mode d'essai, lecture VR152 (FCS. GAN) YEDS-7

[Marche à suivre]

1. Régler la sortie du générateur AF sur 1,2 kHz et 1 Vc-c.
2. Appuyer sur la touche MANUAL/TRACK SEARCH FWD ▷▷ / ▷▷| ou la touche REV |◁◁ / ◁◁ pour placer le capteur à mi-chemin sur le disque (R=35 mm). Ensuite, appuyer sur la touche PROGRAM, la touche PLAY/PAUSE ▷/||, puis sur la touche PLAY/PAUSE ▷/|| (deux fois sur la touche ▷/||), dans cet ordre, pour fermer les circuits servo respectifs et placer le lecteur en mode de lecture.
3. Ajuster VR152 (FCS. GAN) de façon que la forme d'onde de Lissajous soit symétrique aux alentours de l'axe X et l'axe Y.

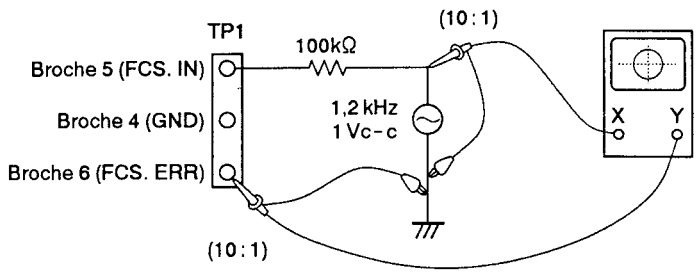
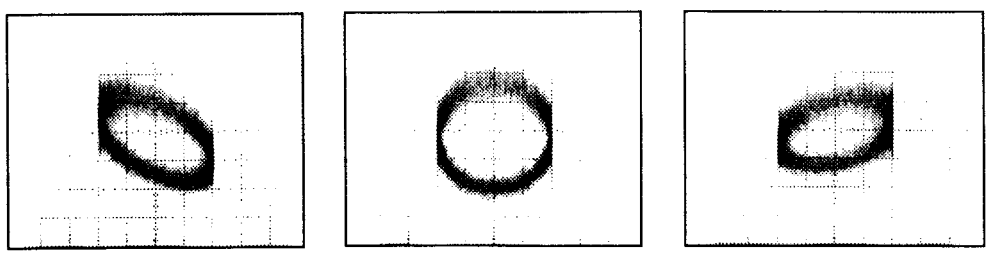


Figure 6

Réglage de gain de mise au point



Gain supérieur | Gain optimum | Gain inférieur

7. Réglage de Gain de Boucle Asservie de l'Alignement

● Objectif	Pour optimaliser le gain de la boucle d'asservissement de l'alignement.		
● Symptôme quand déréglé	La lecture ne commence pas, l'actuateur est parasité pendant la recherche, ou des pistes sont sautées.		
● Raccordement des instruments de mesure	Voir Figure 7. [Réglages] GAN. 1 GAN. 2 50 mV/division 50 mV/division mode X-Y	● Etat du lecteur ● Emplacement du réglage ● Disque	Mode d'essai, lecture VR151 (TRK. GAN) YEDS-7

[Marche à suivre]

1. Régler la sortie du générateur AF sur 1,2 kHz et 2 Vc-c.
2. Appuyer sur la touche MANUAL/TRACK SEARCH FWD ▷▷ / ▷▷| ou la touche REV |◁◁ / ◁◁ pour placer le capteur à mi-chemin sur le disque (R=35 mm). Ensuite, appuyer sur la touche PROGRAM, la touche PLAY/PAUSE ▷/II, puis sur la touche PLAY/PAUSE ▷/II (deux fois sur la touche ▷/II), dans cet ordre, pour fermer les circuits servo respectifs et placer le lecteur en mode de lecture.
3. Ajuster VR151 (TRK. GAN) de façon que la forme d'onde de Lissajous soit symétrique aux alentours de l'axe X et l'axe Y.

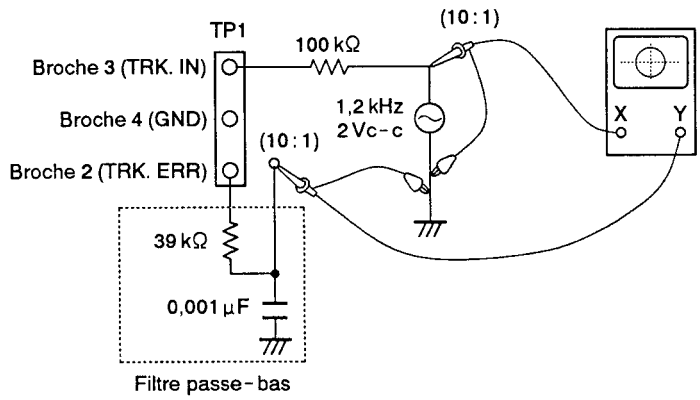
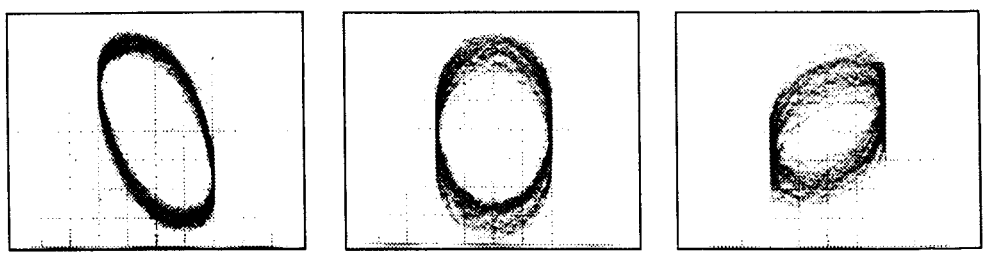


Figure 7

Réglage de gain d'alignement



Gain supérieur | Gain optimum | Gain inférieur

8. Vérification du Signal d'Erreur de la Mise au Point

● Objectif ● Symptôme quand déréglé	Pour juger si le capteur est bon ou pas, en observant le signal d'erreur de la mise au point. L'état du capteur s'évalue à partir de l'amplitude du signal d'erreur d'alignement (comme décrit dans le paragraphe relatif à l'équilibrage d'erreur d'alignement), ainsi qu'à paritir de la forme d'onde du signal d'erreur de mise au point.		
● Raccordement des instruments de mesure	Raccorder l'oscilloscope à TP1, broche 6 (FCS. ERR). [Réglages] 100 mV/division 5 ms/division mode CC	● Etat du lecteur ● Emplacement du réglage ● Disque	Mode de test, arrêt Aucun YEDS-7

[Marche à suivre]

1. Raccorder TP1, broche 5 à la masse.
2. Installer le disque.
3. Tout en regardant l'écran de l'oscilloscope, appuyer sur la touche PROGRAM et observer la forme d'onde de la Figure 8, pendant quelques instants. Vérifier que l'amplitude atteint au moins 2,5 Vc-c et que les amplitudes positive et négatives soient égales. Comme la forme ne sort que pour un moment, quand la touche PROGRAM est enclenchée, appuyer sur à plusieurs reprises sur cette touche, jusqu'à ce que la forme d'onde ait été vérifiée.

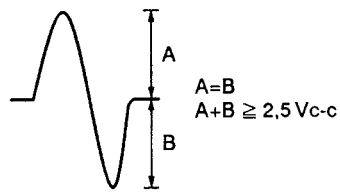


Figure 8

[Evaluation du capteur]

Ne pas tenter d'évaluer l'état du capteur tant que tous les réglages ne sont pas corrects. Les cas suivants témoignent de l'anomalie du capteur.

1. L'amplitude du signal d'erreur d'alignement est extrêmement petite (inférieure à 2 Vc-c).
2. L'amplitude du signal d'erreur de mise au point est extrêmement petite (inférieure à 2,5 Vc-c).
3. Les amplitudes positive et négative du signal d'erreur de mise au point sont extrêmement asymétriques (taux 2:1 ou plus).
4. Le signal RF est trop petit (inférieur à 0,8 Vc-c) et même si VR1 (alimentation du laser) est ajustée, le signal RF ne peut être élevé au niveau standard.

6. AJUSTES

6.1 Métodos de Ajuste

Si un reproductor de discos compactos se ajusta incorrecta o inadecuadamente, puede funcionar mal o no trabajar incluso aunque no exista ningún problema en el captor ni en los circuitos. Ajuste correctamente siguiendo el procedimiento de ajuste.

● Ítemes de Ajuste/Verificación y Orden

Paso	Ítem	Punto de Prueba	Lugar de Ajuste
1	Ajuste del descentramiento de enfoque	TP1, Patilla 6 (FCS. ERR)	VR103 (FCS. OFS)
2	Ajuste de retícula	TP1, Patilla 2 (TRK. ERR)	Ranura de ajuste de retícula
3	Ajuste del equilibrio de ajuste de seguimiento	TP1, Patilla 2 (TRK. ERR)	VR102 (TRK. BAL)
4	Ajuste de la inclinación en sentido radial / tangencial del captor	TP1, Patilla 1 (RF)	Tornillo de ajuste de la inclinación radial. Tornillo de ajuste de la inclinación tangencial
5	Ajuste del nivel de RF	TP1, Patilla 1 (RF)	VR1 (Nivel de RF)
6	Ajuste de la ganancia del bucle del servo de enfoque	TP1, Patilla 5 (FCS. IN) TP1, Patilla 6 (FCS. ERR)	VR152 (FCS. GAN)
7	Ajuste de la ganancia del bucle del servo de seguimiento	TP1, Patilla 3 (TRK. IN) TP1, Patilla 2 (TRK. ERR)	VR151 (TRK. GAN)
8	Verificación de la señal de error de enfoque	TP1, Patilla 6 (FCS. ERR)	————

● Tabla de abreviaturas

FCS. ERR :Error de enfoque
FCS. OFS :Descentramiento de enfoque
TRK. ERR :Error de seguimiento
TRK. BAL :Equilibrio de seguimiento
FCS GAN :Ganacia de enfoque
TRK GAN :Ganacia de seguimiento
FCS. IN :Entrada de enfoque
TRK. IN :Entrada de seguimiento

● Instrumentos y Herramientas de Medición

1. Osciloscopio de doble traza (Sonda de 10:1)
2. Oscilador de baja frecuencia
3. Disco de prueba (YEDS-7)
4. Filtro de paso bajo (39 kΩ + 0,001 μF)
5. Resistor (100 kΩ)
6. Herramientas estándar

● Ubicación de Los Puntos de Prueba y Los Resistores Variables de Ajuste

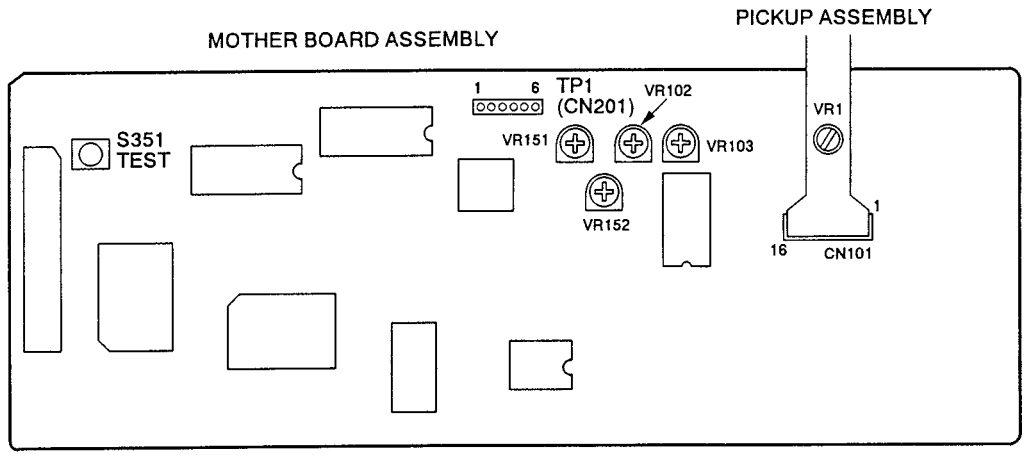


Figura 1 Lugares de ajuste

● Notas

1. Emplee una sonda de 10:1 para el osciloscopio.
2. Todas las posiciones de los mandos (ajustes) para el osciloscopio de los procedimientos de ajuste son para cuando se emplee la sonda de 10:1.

● Modo de Prueba

Estos modelos poseen un modo de prueba que permite realizar fácilmente los ajustes y las comprobaciones requeridos para el servicio. Cuando estos modelos estén en el modo de prueba, las teclas del panel frontal trabajarán de forma diferente a la normal. Los ajustes y las comprobaciones podrán realizarse accionando estas teclas de acuerdo con el procedimiento correcto. Para estos modelos, todos los ajustes se realizarán en el modo de prueba.

[Puesta de estos modelos en el modo de prueba]

A continuación se indica cómo poner estos modelos en el modo de prueba.
1.Ponga en OFF el interruptor de alimentación.
2. Ponga la tecla TEST (S351). (Consulte la figura 1.)
3.Ponga en ON el interruptor de alimentación.

Cuando haya ajustado correctamente el modo de prueba, la visualización será diferente a la obtenida normalmente al conectar la alimentación. Si la visualización sigue siento la normal, el modo de prueba no se habrá ajustado normalmente, por lo que tendrá que repetir los pasos 1 a 3.

[Desactivación del modo de prueba]

A continuación se indica el procedimiento para desactivar el modo de prueba.

1. Presione la tecla STOP y cese todas las operaciones.
2. Ponga en OFF el interruptor de alimentación del panel frontal.

[Operaciones de teclas en el modo de prueba]

Código	Nombre de la Tecla	Función en el Modo de Prueba	Explicación
	PROGRAM	Cierre del servo de enfoque	El diodo láser se encenderá y el actuador de enfoque se eleva, después se desciende lentamente, y el servo de enfoque se cerrará en el punto en el que el objetivo se enfoque sobre el disco. Con el reproductor en este estado, si gira ligeramente con la mano el disco parado, podrá oír el sonido del servo de enfoque. Si puede oír este sonido, el servo de enfoque estará funcionando correctamente. Si presiona esta tecla sin disco montado, el diodo láser se encenderá, el actuador de enfoque se vera empujado hacia arriba, y después se levantará y descenderá y se eleva dos veces, y volverá a su posición original.
▷/□□	PLAY/ PAUSE	Activación del servo del eje	Pondrá en marcha el motor del eje haciéndolo girar hacia la derecha y después la rotación del disco alcanzará la velocidad prescrita (unas 500 rpm en la periferia interior), y pondrá el servo del eje en un bucle cerrado. Tenga cuidado. Si presiona esta tecla cuando no haya disco montado, el motor del eje girará a la velocidad máxima. Si el servo de enfoque no pasa correctamente a un bucle cerrado, o si el haz lasérico incide en la sección del espejo en el la periferia del disco, ocurrirá el mismo síntoma.
▷/□□	PLAY/ PAUSE	Apertura/cierre del servo de seguimiento	Si presiona esta tecla cuando el servo de enfoque y el servo del eje están funcionando correctamente en bucles cerrados, el servo de seguimiento se pondrá en bucle cerrado, en el panel frontal se visualizarán el número de canción que esté reproduciéndose y el tiempo transcurrido, y se producirá la salida de la señal de reproducción. Si el tiempo transcurrido no se visualiza o no se cuenta correctamente, o si el sonido no se reproduce correctamente, es posible que el rayo lasérico esté incidiendo en la sección sin sonido grabado en el borde exterior del disco, o que exista algún otro problema. Esta tecla es basculante de acción alternativa, y abre/cierra el servo de seguimiento alternativamente. Esta tecla no funcionará cuando no haya disco montado.

Código	Nombre de la Tecla	Función en el Modo de Prueba	Explicación
⏮ / ◁◁	MANUAL/ TRACK SEARCH REV	Retroceso del carro (hacia adentro)	Moverá la posición del captor hacia el diámetro interior del disco. Si presiona esta tecla con el servo de seguimiento en bucle cerrado, dicho bucle pasará automáticamente a bucle abierto. Como el captor no se para automáticamente en el punto final mecánico en el modo de prueba, tenga cuidado cuando realice esta operación.
▷▷ / ⏭	MANUAL/ TRACK SEARCH FWD	Avance del carro (hacia afuera)	Moverá la posición del captor hacia la periferia del disco. Si presiona esta tecla con el servo de seguimiento en bucle cerrado, dicho bucle pasará automáticamente a bucle abierto. Como el captor no se para automáticamente en el punto final mecánico en el modo de prueba, tenga cuidado cuando realice esta operación.
□	STOP	Parada	Inicializa y se para la rotacion del desco. El captor y el disco permanecen donde están cuando se presiona esta tecla.
⏏	EJECT	Expulsión del cargador de discos compactos	Almacenará el disco 1 en el cargador de discos compactos, y después expulsará dicho cargador. Sin embargo, aunque el cargador de discos compactos sea expulsado, el captor no volverá a su posición de reposo. Aunque vuelva a montar el cargador de discos compactos, el captor permanecerá donde estaba.

Nota : Cuando inserte el cargador, el disco 1 del mismo se cargará automáticamente.

[Cómo reproducir un disco en el modo de prueba]

En el modo de prueba, como los servos funcionan independientemente, la reproducción de un disco requiere el que usted emplee las teclas en el orden correcto para cerrar los servos.
A continuación se indica la secuencia de operación de teclas para reproducir un disco en el modo de prueba.

PROGRAM	Hará que se encienda el diodo láser y cerrará el servo de enfoque.
⇩	
PLAY/PAUSE ▷/II	Pondrá en marcha el motor del eje y hará que se cierre el servo del eje.
⇩	
PLAY/PAUSE ▷/II	Cerrará el servo de seguimiento.
(Presione la tecla ▷/II dos veces)	

Espere de 2 a 3 segundos por lo menos entre cada una de estas operaciones.

1. Ajuste del Descentramiento del Enfoque

● Objetivo	Ajuste de la tensión de CC para el amplificador de error de enfoque.		
● Síntomas en caso de desajuste	El reproductor no enfoca y la señal de RF contiene perturbaciones.		
● Conexión de los instrumentos de medición	Conecte el osciloscopio a TP1, patilla 6 (FCS. ERR) [Ajustes] 5 mV/división 10 ms/división modo de CC	● Estado del reproductor	Mode de prueba, parado (con el interruptor de alimentación en ON)
		● Lugar de ajuste	VR103 (FCS. OFS)
		● Disco	No es necesario

[Procedimiento]

Ajuste VR103 (FCS. OFS) de forma que la tensión de CC de TP1, patilla 6 (FCS. ERR) sea de −15 0 ± 50 mV.

2. Ajuste de Retícula

● Objetivo	Alineación de los puntos del haz lasárico de generación de error de seguimiento al ángulo óptimo en la pista.		
● Síntomas en caso de desajuste	La reproducción no se inicia, la búsqueda de canciones es imposible, las pistas se saltan.		
● Conexión de los instrumentos de medición	Conecte el osciloscopio a TP1, patilla2 (TRK. ERR)a través de un filtro de paso bajo. (Consulte la figura 2) [Ajustes] 50 mV/división 5 ms/división modo de CC	● Estado del reproductor ● Lugar de ajuste ● Disco	Modo de prueba, servos de enfoque y del eje cerrados, y servo de seguimiento abierto. Ranura de ajuste de retícula del captor YEDS-7

[Procedimiento]

1. Mueva el captor hasta el la mitad del disco (R=35mm) con la tecla MANUAL/TRACK SEARCH FWD ▷▷ / ▷▷| o la tecla REV |◁◁ / ◁◁ .
2. Presione la tecla PROGRAM, y después la tecla PLAY/PAUSE ▷ / ❙❙ , por este orden, a fin de cerrar el servo de enfoque y después el servo del eje.
3. Inserte un destornillador normal en la ranura de ajuste de la retícula y ajuste la retícula hasta encontrar el punto nulo. Para más detalles, consulte la página siguiente.
4. Si gira lentamente el destornillador hacia la derecha desde el punto nulo, la amplitud de la onda aumentará gradualmente. Después, si continúa girando el destornillador, la amplitud de la onda se volverá otra vez más pequeña. Gire el distornillador hacia la derecha desde el punto nulo y ajuste la retícula al primer punto en el que la amplitud de la onda alcance su valor máximo.
   Referencia : En la figura 3 se muestra la relación entre el ángulo del haz de seguimiento con la pista y la forma de onda.

   Nota : La amplitud de la señal de error de seguimiento será de aproximadamente 3 Vp-p (cuando se emplee un filtro de paso bajo de 39 kΩ , 0,001 μF). Si la amplitud está extremadamente pequeña (2 Vp-p ó menos), la causa será el funcionamiento malo en el lente objetivo o en el captador. Si la diferencia entre la amplitud de la señal de error en el borde interior y exterior del disco es superior al 10%, la retícula no estará ajustada al punto óptimo, por lo que tendrá que volver a ajustaria.
5. Devuelva el captor hasta la mitad más o menos del disco con la tecla MANUAL/TRACK SEARCH REV |◁◁ / ◁◁ , presione la tecla PLAY/PAUSE ▷ / ❙❙ , y vuelva a comprobar si en el panel frontal se visualizan el número de canción y el tiempo transcurrido. Si no se visualizan esta vez, o si el tiempo transcurrido cambia irregularmente, vuelva a comprobar el punto nulo y ajuste otra vez la retícula.

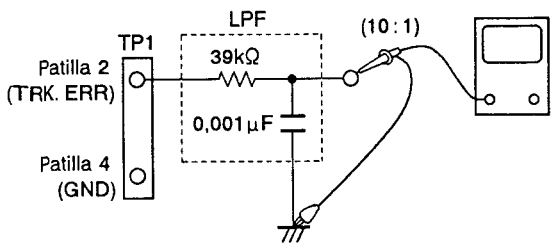
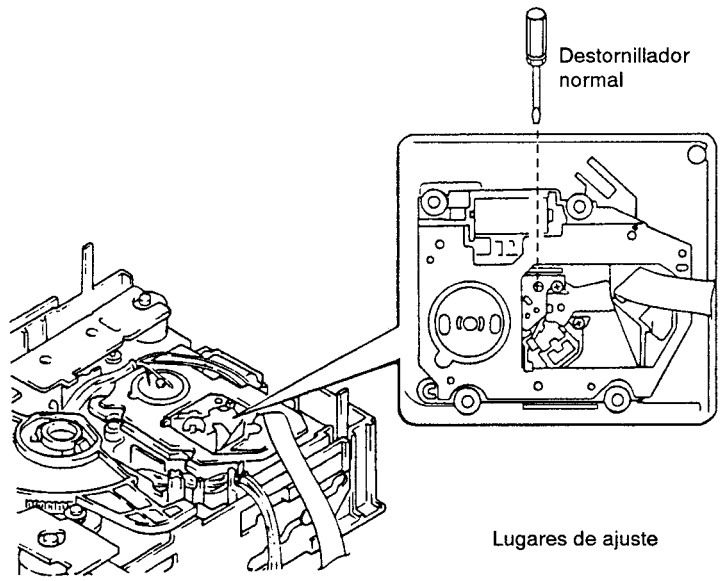


Figura 2



[Cómo encontrar el punto nulo]

Cuando inserte el destornillador normal en la ranura para el ajuste de la retícula y cambie el ángulo de la misma. La amplitud de la señal de error de seguimiento de TP1, patilla 2, cambiará. Dentro del margen para la retícula existen cinco o seis lugares en los que la amplitud alcanza el valor mínimo. De estos cinco o seis lugares, solamente hay uno en el que la envolvente de la forma de onda es uniforme. Este lugar es donde los tres haces laséricos divididos por la retícula se encuentran exactamente sobre la misma pista. (Consulte la figura 3.)
Este punto se denomina punto nulo. Cuando ajuste la retícula, este punto se encontrará y empleará como posición de referencia.

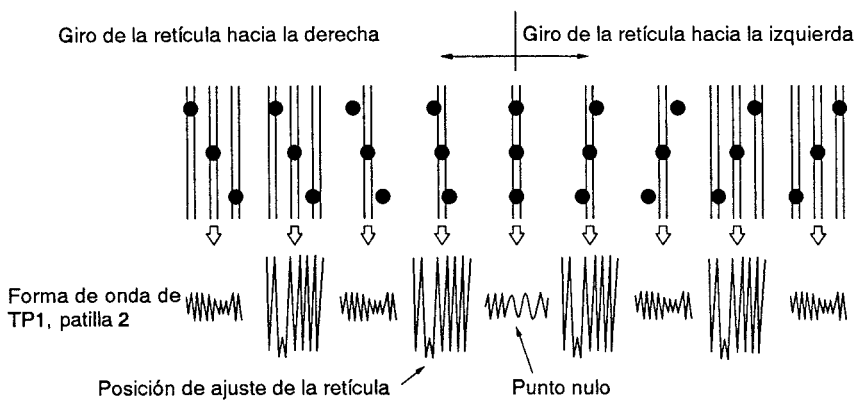
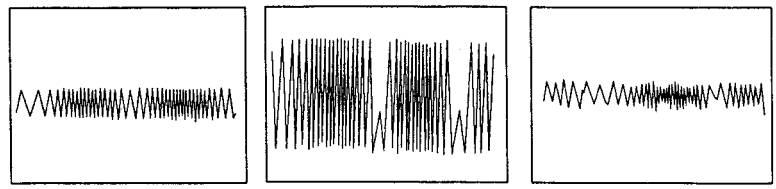

Giro de la retícula hacia la derecha
Giro de la retícula hacia la izquierda
Forma de onda de
TP1, patilla 2
Posición de ajuste de la retícula
Punto nulo

Figura 3

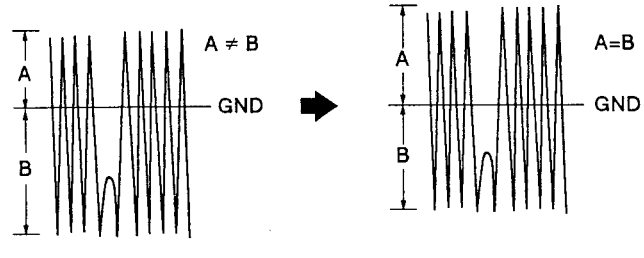


3. Ajuste del Equilibrio de Error de Seguimiento

● Objetivo	Corrección de la variación de la sensibilidad del fotodiodo de seguimiento.		
● Síntomas en caso de desajuste	La reproducción no se inicia o la búsqueda de canciones es imposible.		
● Conexión de los instrumentos de medición	Conecte el osciloscopio a TP1, patilla 2 (TRK. ERR). Esta conexión puede realizarse a través de un filtro de paso bajo [Ajustes] 50 mV/división 5 ms/división modo de CC	● Estado del reproductor ● Lugar de ajuste ● Disco	Modo de prueba, servos de enfoque y del eje cerrados, y servo de seguimiento abierto VR102 (TRK. BAL) YEDS-7

[Procedimiento]

1. Mueva el captor hasta la mitad del disco (R=35 mm) con la tecla MANUAL/TRACK SEARCH FWD ▷▷ / ▷▷| o la tecla REV |◁◁ / ◁◁ .
2. Presione la tecla PROGRAM, y después la tecla PLAY/PAUSE ▷ / ❚❚ , por este orden, a fin de cerrar el servo de enfoque y después el servo del eje.
3. Haga coincidir la línea brillante (masa) del centro de la pantalla del osciloscopio y ponga éste en el modo de CC.
4. Ajuste VR102 (TRK. BAL) de forma que la amplitud positiva y la negativa de la señal de error de seguimiento de TP1 patilla 2 (TRK. ERR) sean iguales (en otras palabras, de forma que no haya componente de CC).



Cuando hay componente de CC

Cuando no hay componente de CC

4. Ajuste de la Inclinación en Sentido Radial / Tangencial del Captor

● Objetivo	Ajustar el ángulo del captor en relación con el disco de forma que los haces lasércicos incidan perpendicularmente sobre el mismo a fin de poder leer con la mayor exactitud las señales de RF.		
● Síntomas en caso de desajuste	Sonido quebrado, algunos discos pueden reproducirse pero otros no.		
● Conexión de los instrumentos de medición	Conecte el osciloscopio a TP1, patilla 1 (RF). [Ajustes] 20 mV/división 200 ns/división modo de CA	● Estado del reproductor ● Lugar de ajuste ● Disco	Modo de prueba, reproducción Tornillo de ajuste de la inclinación radial y tornillo de ajuste de la inclinación tangencial YEDS-7

[Procedimiento]

1. Para un tipo de reproducción múltiple de disco compacto, emplee la tecla MANUAL/TRACK SEARCH FWD ▷▷ / ▷▷| o la tecla REV |◁◁ / ◁◁ a fin de mover el captor hasta la mitad del disco (R=35 mm)
   Presione la tecla PROGRAM, la tecla PLAY/PAUSE ▷ / ❙❙ , y después la tecla PLAY/PAUSE ▷ / ❙❙ (presione la tecla ▷ / ❙❙ dos veces), por este orden, a fin de cerrar los servos rispectivos, y ponga el reproductor en el modo de reproducción.
2. En primer lugar, gire el tornillo de ajuste de inclinación radial con un destornillador Phillips hasta que el patrón ocular (la forma de diamante del centro de la señal de RF) pueda verse con la mayor claridad.
3. A continuación, ajuste el tornillo de ajuste de inclinación tangencial con un destornillador Phillips hasta que el patrón ocular (la forma de diamante del centro de la señal de RF) pueda verse con la mayor claridad (figura 5).
4. Vuelva a girar el tornillo de ajuste de inclinación radial y el tornillo de inclinación tangencial hasta que el patrón ocular pueda verse con la mayor claridad. Si es necesario, ajuste alternativamente los dos tornillos hasta que el patrón ocular pueda verse con la mayor claridad.

Nota:Radial y tangencial significan las direcciones en relación con el disco mostrado en la figura 4.

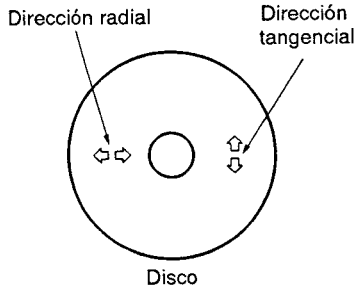
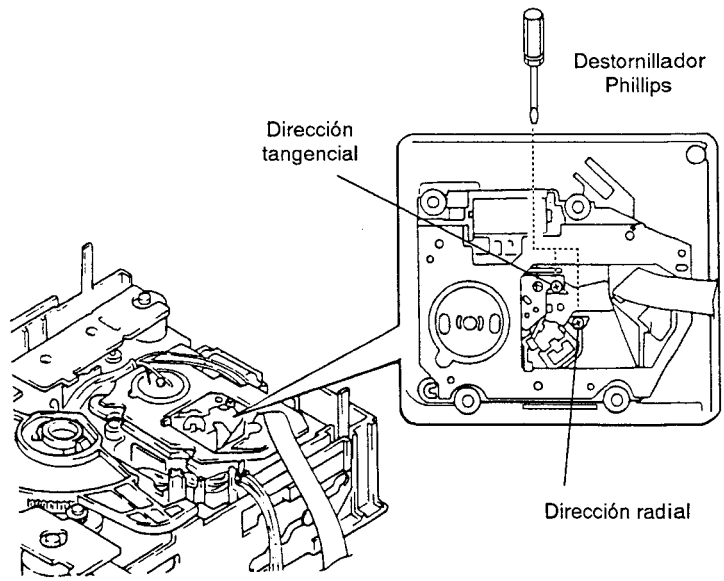


Figura 4



Lugares de ajuste

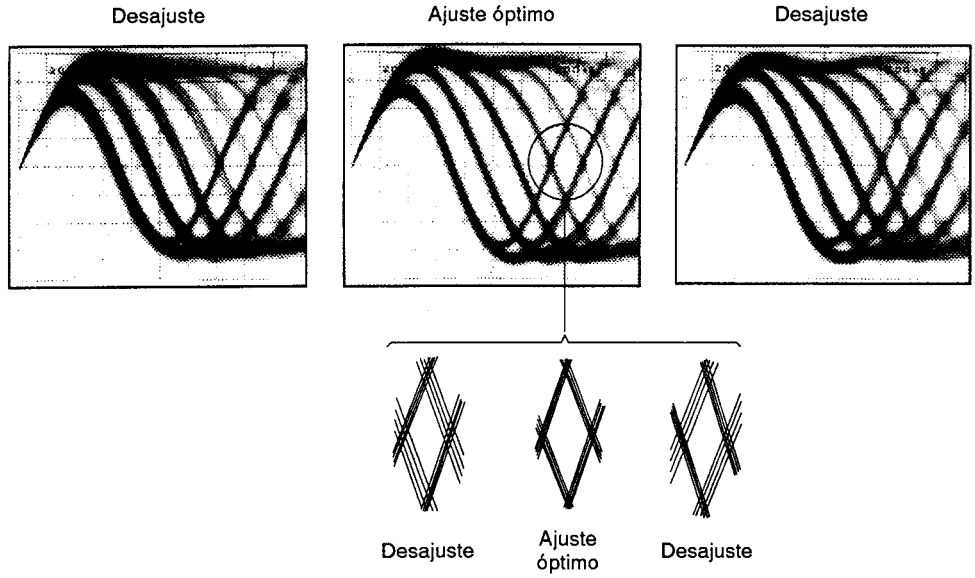


Figura 5 Patron optico

5. Ajuste del Nivel de RF

● Objetivo ● Síntomas en caso de desajuste	Optimización de la amplitud de la señal de RF de reproducción. La reproducción no se inicia o la búsqueda de canciones es imposible.		
● Conexión de los instrumentos de medición	Conecte el osciloscopio a TP1, patilla 1 (RF). [Ajustes] 50 mV/división 10 ms/división modo de CA	● Estado del reproductor ● Lugar de ajuste ● Disco	Modo de prueba, reproducción VR1 (potencia de láser) YEDS-7

[Procedimiento]

1. Mueva el captor hasta la mitad del disco (R=35 mm) con la tecla MANUAL/TRACK SEARCH FWD ▷▷ / ▷▷| o la tecla REV |◁◁ / ◁◁, presione la tecla PROGRAM, la tecla PLAY/PAUSE ▷ /II, y después la tecla PLAY/PAUSE ▷ /II (presione la tecla ▷ /II dos veces), por este orden a fin de cerrar los servos respectivos, y ponga el reproductor en el mode de reproducción.
2. Ajuste VR1 (potencia de láser) de forma que la amplitud de la señal de RF sea de 1,2 Vp-p ± 0,1 V.

6. Ajuste de la Ganancia del Bucle del Servo de Enfoque

● Objetivo ● Síntomas en caso de desajuste	Optimización de la ganancia del bucle del servo de enfoque. La reproducción no se inicia o el actuador de enfoque produce ruido.		
● Conexión de los instrumentos de medición	Consulte la fugura 6. [Ajustes] CH1 CH2 20 mV/división 5mV/división modo X-Y	● Estado del reproductor ● Lugar de ajuste ● Disco	Modo de prueba, reproducción VR152 (FCS. GAN) YEDS-7

[Procedimiento]

1. Ajuste la salida del generador de AF a 1,2 kHz y 1 Vp-p.
2. Presione la tecla MANUAL/TRACK SEARCH FWD ▷▷ / ▷▷| o la tecla REV |◁◁ / ◁◁ para mover el captor hasta la mitad del disco (R=35 mm), y después presione la tecla PROGRAM, la tecla PLAY/PAUSE ▷ / ❚❚ , y después la tecla PLAY/PAUSE ▷ / ❚❚ (presione la tecla ▷ / ❚❚ dos veces), por este orden, a fin de cerrar los servos correspondientes y poner el reproductor en el modo de reproducción.
3. Ajuste VR152 (FCS. GAN) hasta que la forma de onda de Lissajous sea simétrica alrededor del eje X y el eje Y.

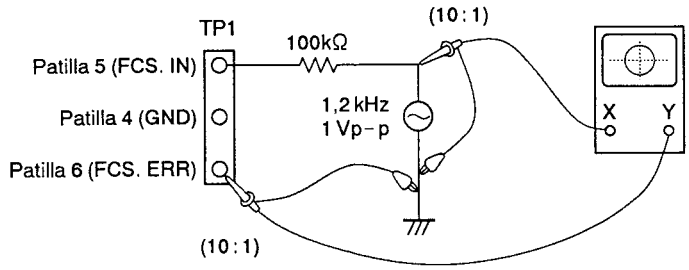
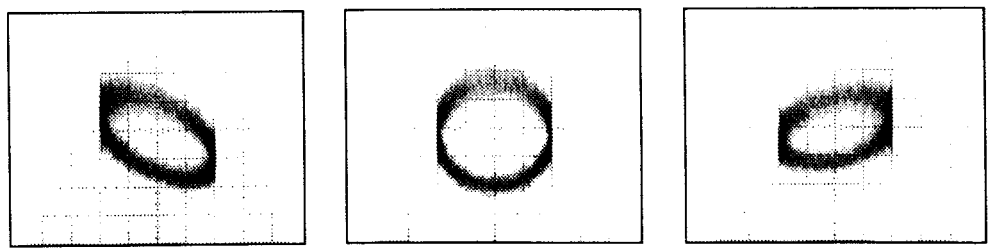


Figura 6

Ajuste de la ganancia de enfoque



Ganancia superio | Ganancia óptima | Ganancia inferior

7. Ajuste de la Ganancia del Bucle del Servo de Seguimiento

● Objetivo ● Síntomas en caso de desajuste	Optimización de la ganancia del bucle del servo de seguimiento. La reproducción no se inicia, el actuador de enfoque produce ruido, o se saltan pistas.		
● Conexión de los instrumentos de medición	Consulte la figura 7. [Ajustes] CH1 CH2 50 mV/división 50 mV/división modo X-Y	● Estado del reproductor ● Lugar de ajuste ● Disco	Modo de prueba, reproducción VR151(TRK. GAN) YEDS-7

[Procedimiento]

1. Ajuste la salida del generador de AF a 1,2 kHz y 2 Vp-p.
2. Presione la tecla MANUAL/TRACK SEARCH FWD ▷▷ / ▷▷| o la tecla REV |◁◁ / ◁◁ para mover el captor hasta la mitad del disco (R=35 mm), y después presione la tecla PROGRAM, la tecla PLAY/PAUSE ▷/II , y la tecla PLAY/PAUSE ▷/II (presione la tecla ▷/II dos veces), por este orden, a fin de cerrar los servos respectivos y poner el reproductor en el modo de reproducción.
3. Ajuste VR151 (TRK. GAN) hasta que la forma de onda de Lissajous sea simétrica alrededor del eje X y el eje Y.

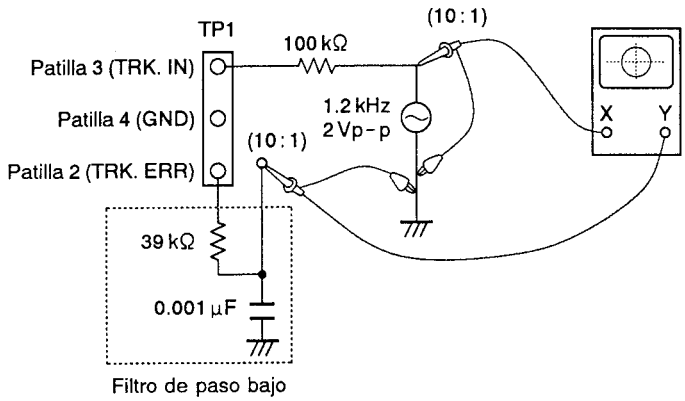
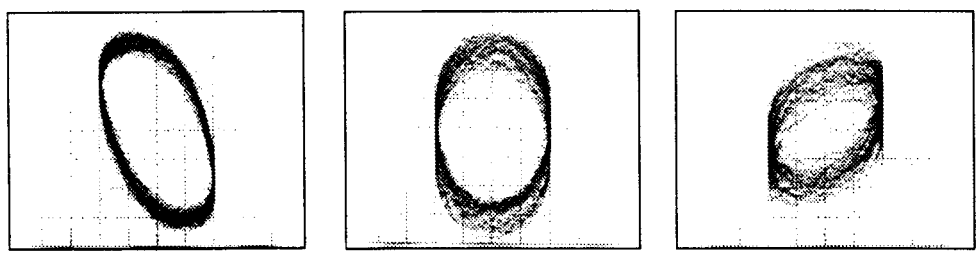


Figura 7

Ajuste de la ganancia de seguimiento



Ganancia superior | Ganancia óptima | Ganancia inferior

8. Verificación de la Señal de Error de Enfoque (Curva S de Enfoque)

<table>
<tr><td>● Objetivo

● Síntomas en caso de desajuste</td><td colspan="3">Juzgar si el captor est'a bien o no observando la señal de error de enfoque. El captor se juzga por la amplitud de la señal de error de seguimiento (como se ha indicado en la sección sobre el ajuste del equilibrio de error de seguimiento) y la forma de onda de la señal de error de enfoque.</td></tr>
<tr><td>● Conexión de los instrumentos de medición</td><td>Conecte el osciloscopio a TP1, patilla 6 (FCS. ERR).

[Ajustes] 100 mV/división
5 ms/división
modo de CC</td><td>● Estado del reproductor

● Lugar de ajuste

● Disco</td><td>Modo de prueba, parada

Ninguno

YEDS-7</td></tr>
</table>

[Precedimiento]

1. Conecte TP1, patilla 5, a masa.
2. Coloque el disco.
3. Contemplando la pantalla del osciloscopio, presione la tecla PROGRAM y observe durante un momento la forma de onda de la figura 8. Verifique si la amplitud es de 2,5 Vp-p por lo menos y si la amplitud de las partes positiva y negativa son iguales. Como la forma de onda solamente sale durante un momento cuando se presiona la tecla PROGRAM, presione una y otra vez esta tecla hasta que logre comprobar la forma de onda.

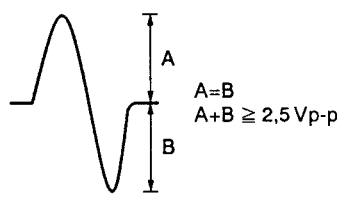


Figura 8

[Juicio sobre el captor]

No juzgue el captor hasta haber finalizado correctamente todos los ajustes. En los casos siguiented es posible que haya algo erróneo en el captor.

1. La amplitud de la señal de error de seguimiento es extremadamente pequeña (menos de 2 Vp-p).
2. La amplitud de la señal de error de enfoque es extremadamente pequeña (menos de 2,5 Vp-p).
3. Las amplitudes de las partes positiva y negativa de la señal de error de enfoque son extremadamente asimétricas (relación de 2:1 o superior).
4. La señal de RF es demasiado pequeña (menos de 0,8 Vp-p) y aunque se ajuste VR1 (potencia de láser), la señal de RF no puede aumentarse hasta el nivel estándar.

7. FOR PD-J900M/HBXJS, SD, PD-J800M/HEMXJS, HBXJS AND SD TYPES

NOTES:
- *Part without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by " ◉ " are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

CONTRAST OF MISCELLANEOUS PARTS

PD-J900M/HBXJS, SD, PD-J800M/HEMXJS, HBXJS, SD and PD-J900M/HEMXJS have the same construction except for the following:

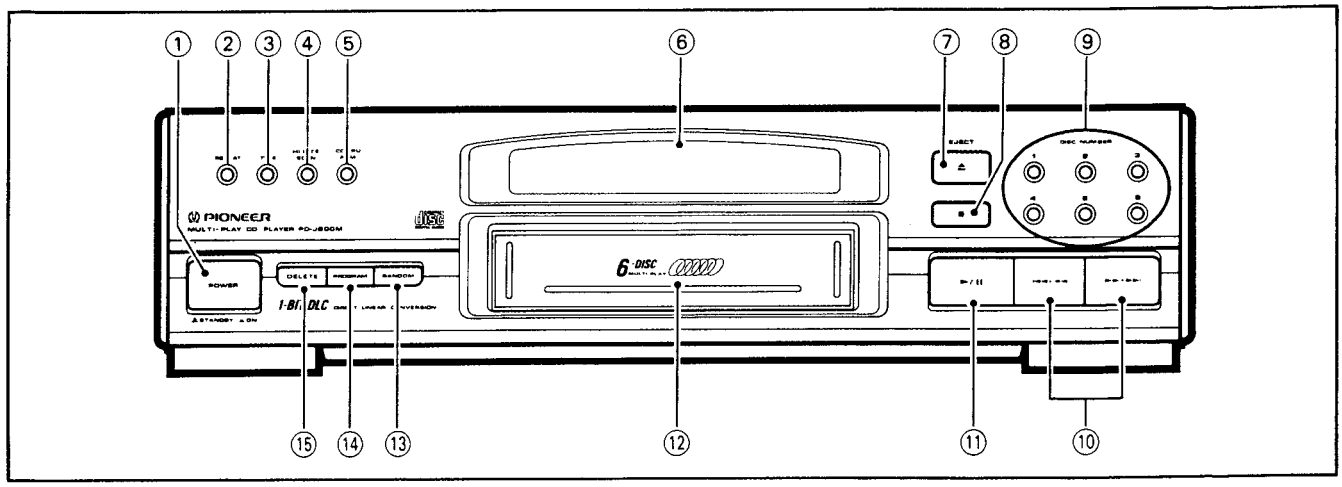
Mark	Symbol & Description	Part No.						Remarks
		PD-J900M /HEMXJS	PD-J900M /HBXJS	PD-J900M /SD	PD-J800M /HEMXJS	PD-J800M /HBXJS	PD-J800M /SD	
◉	Sub board assembly	PWX1198	PWX1198	PWX1200	PWX1198	PWX1198	PWX1200	
◉	└ Function board assembly	PWZ2203	PWZ2203	PWZ2381	PWZ2203	PWZ2203	PWZ2381	
⚠	AC power cord	PDG1008	PDG1021	RDG1003	PDG1008	PDG1021	RDG1003	
⚠	Power transformer (AC220-230V, 240V)	PTT1172	PTT1172	• • • • •	PTT1172	PTT1172	• • • • •	
⚠	Power transformer (AC110V, 120-127V, 220V, 240V)	• • • • •	• • • • •	PTT1126	• • • • •	• • • • •	PTT1126	
⚠	Line voltage selector (AC110V, 120-127V, 220V, 240V)	• • • • •	• • • • •	PSB1002	• • • • •	• • • • •	PSB1002	
	Function panel	PNW2097	PNW2097	PNW2097	PNW2146	PNW2146	PNW2146	
	Reg assembly	RXA1448	RXA1448	RXA1448	RXA1277	RXA1277	RXA1277	
	CD packing case	PHG1832	PHG1832	PHG1781	PHG1833	PHG1833	PHG1782	For packing
	Operating instructions (English)	• • • • •	PRB1164	PRB1164	• • • • •	PRB1164	PRB1164	
	Operating instructions (English, French, Dutch, Italian, German, Swedish, Spanish, Portuguese)	PRE1152	• • • • •	• • • • •	PRE1152	• • • • •	• • • • •	
	Operating instructions (Spanish)	• • • • •	• • • • •	PRC1041	• • • • •	• • • • •	PRC1041	

FUNCTION BOARD ASSEMBLY (PWZ2381)

The function board assembly (PWZ2381) and the function board assembly (PWZ2203) have the same construction except for the following:

Mark	Symbol & Description	Part No.		Remarks
		PWZ2203	PWZ2381	
	R701 - R704	RD1/6PM4R7J	• • • • •	

8. PANEL FACILITIES



① POWER switch (■ STANDBY ▬ ON)

Press to turn power to the unit ON and STANDBY.

② REPEAT button

Press this button for repeat playback. Pressing the button once, twice or three times will change the repeat mode from single track repeat, all tracks repeat, and repeat playback cancellation.

③ TIME button

This button selects the display mode of the indicator panel.
When the button is pressed during CD playback, the indication changes from TIME, REM, to TOTAL in that order (For details concerning the display contents, refer to the DISPLAY SECTION (see page 8).

④ HI-LITE SCAN (disc/track) button

DISC SCAN: Press this button during stop mode to play back a 10-second passage positioned one minute after the beginning of the first track for each disc contained in the magazine in the order of disc 1 through disc 6.
TRACK SCAN: Press the button during DISC SCAN to play back a 10-second passage positioned one minute after the beginning of each track in sequence for each disc contained in the magazine in the order of disc 1 through disc 6.
To reset the starting time of HI-LITE SCAN, press HI-LITE SCAN button during normal playback. This stores the elapsed play time and plays back each of the 10-second passages beginning from the stored time.

⑤ COMPU PGM button

If this button is pressed for A.S.E.S. recording and Manual/Track SEARCH buttons are used to designate the length (in minutes) of the recording tape, the CD player will automatically select and program the CD tracks to be recorded. The tracks will be selected for recording so that the empty portion remaining at the end of the tape will be as short as possible. For details regarding this function, consult the operating instructions for the amplifier used.

⑥ Display

⑦ EJECT button (⏏)

Press to eject a magazine. When pressed, any magazine inside is expelled forward.

⑧ Stop button (■)

Press to stop playback. When pressed, the player goes into stop mode and all operations stop.
When pressed during stop mode, the program stored in memory is cleared.

⑨ DISC NUMBER buttons (1—6)

Use to select disc numbers for playback or programming.

⑩ Manual/Track search buttons (|◄◄ • ◄◄, ►► • ►►|)

To perform track search in normal playback, programmed playback or PAUSE mode.
You can advance to the next track or go back to the previous one by using Manual/Track search buttons. The fast forward or fast reverse function will be activated by holding down these buttons.

⑪ Play/Pause button (►/II)

When the CD player is paused or stopped, press to resume play or begin play.
If pressed during play, this temporarily interrupts play.

⑫ Magazine insertion slot

⑬ RANDOM button

Press to begin random playback.

⑭ PROGRAM button

Use to program a sequence of tracks

- Press this button after selecting a desired disc and track with DISC NUMBER and Track search buttons. Tracks will be added in the order in which they are specified.
- If only a DISC NUMBER button is pressed, all tracks on the specified disc will be added to the program. The letters [AL] will be appear on the indicator.

⑮ DELETE button

Pressing this button and then selecting the discs with DISC NUMBER buttons (1 through 6) or selecting the tracks with Manual/Track search buttons will result in the selected discs and tracks not being played even when PLAY button is pressed.

9. SPECIFICATIONS

Type ..... Compact disc digital audio system
Discs used ..... Compact disc
Power requirements
U.K. and Australian models ..... AC 240 V, 50/60 Hz
Multi-voltage models ..... AC 110/120–127/220/240 V (switchable), 50/60 Hz
Power consumption ..... 10 W
S/N Ratio ..... More than 96 dB (EIAJ)
Frequency response ..... 2 Hz to 20 kHz
Number of channels ..... 2 channels (stereo)
Dimensions ..... 360 (W) x 90.5 (H) x 328.5 (D) mm
Weight ..... 3.7 kg

Accessories

- Six-compact disc magazine 1
- Operating Instructions 1

- *The specifications and design of this product are subject to change without notice, due to improvements.*

The Magazine Type Multi-Play CD Players with mark and the Magazines with the same mark are compatible for 5-inch (12 cm) discs.

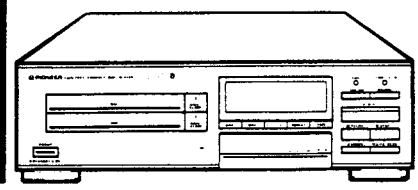
For U.S. customers only

You may purchase additional Pioneer six-compact-disc magazines from your dealer. If however, they are not available at your dealer in the United States, you may order from:

PIONEER ELECTRONIC SERVICE, INC.
2265 East 220th Street
P.O. Box 1760, Long Beach
CA. 90801-1760
U.S.A.
Phone ☎(800) 421-1404

PIONEER®
The Art of Entertainment

Service Manual



SERVICE GUIDE
ORDER NO.
ARP2144

TWIN-TRAY COMPACT DISC PLAYER

PD-Z74T

PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan
PIONEER ELECTRONICS SERVICE INC. P.O. Box 1760, Long Beach, California 90801 U.S.A.
PIONEER ELECTRONICS OF CANADA, INC. 505 Cochrane Drive, Markham, Ontario L3R 8E3 Canada
PIONEER ELECTRONIC [EUROPE] N.V. Keetberglaan 1, 9120 Beveren, Belgium
PIONEER ELECTRONICS AUSTRALIA PTY. LTD. 178-184 Boundary Road, Braeside, Victoria 3195, Australia TEL: [03] 580-9911
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SO MAR. 1991 Printed in Japan

DISASSEMBLY AND REASSEMBLY PROCEDURE OF TWIN MECHANISM

1. DISASSEMBLY

1.1 REMOVAL OF TRAY I

(1) Set the tray I to the OPEN position by pressing the OPEN/CLOSE button.

Note: When openning the tray I manually, insert a finger from the groove and rotate the idler gear in clockwise direction, shown in Fig. 1–1.

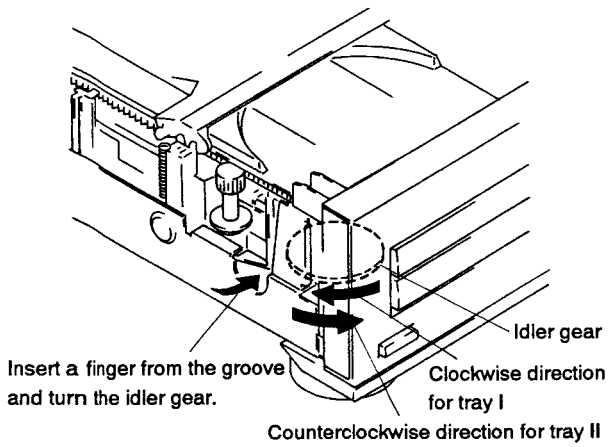
Idler gear
Insert a finger from the groove and turn the idler gear.
Clockwise direction for tray I
Counterclockwise direction for tray II

Fig. 1–1

(2) As shown in Fig. 1–2, insert a screw driver to the left slit of the tray I and pull out the tray in the direction of the arrow B, while the screw driver keeping to press in the direction of the arrow A.

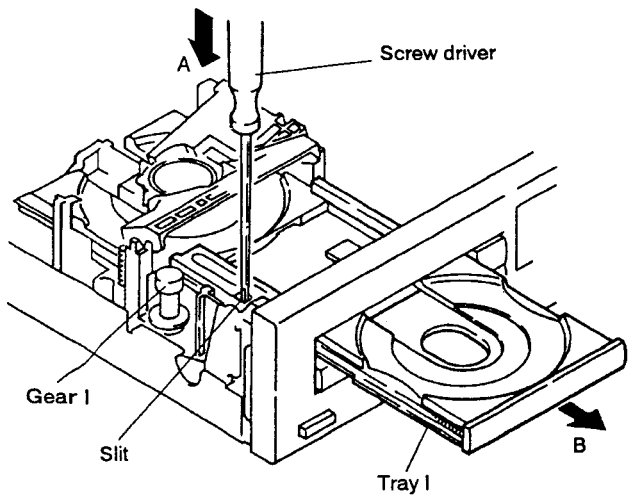

Fig. 1–2

1.2 REMOVAL OF TRAY II

(1) Set the tray II to the OPEN position by pressing the OPEN/CLOSE button.

Note: When openning the tray II manually, rotate the idler gear in the counterclockwise direction, shown in Fig. 1–1.

(2) As shown in Fig. 1–3, insert a screw driver to the right slit of the tray II and pull out the tray in the direction of the arrow B, while the screw driver keeping to press in the direction of the arrow A.

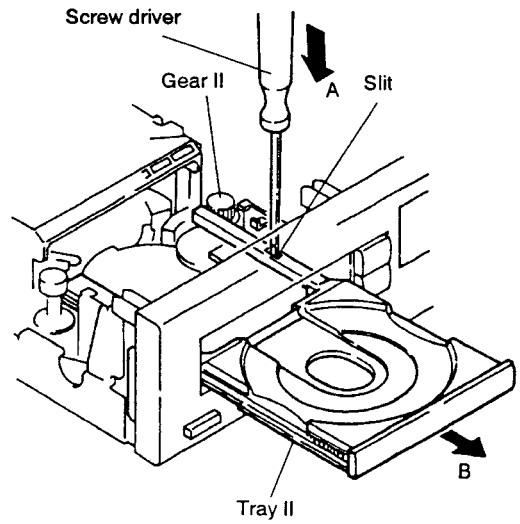

Fig. 1–3

1.3 REMOVAL OF CLAMPER ARM U AND B

(1) As shown in Fig. 1–4, rotate the idler gear so that the clamper assembly not to be clamped on the disc table. Next, take out the clamp sprig and the screw Ⓐ, and remove the clamper arm U and B.

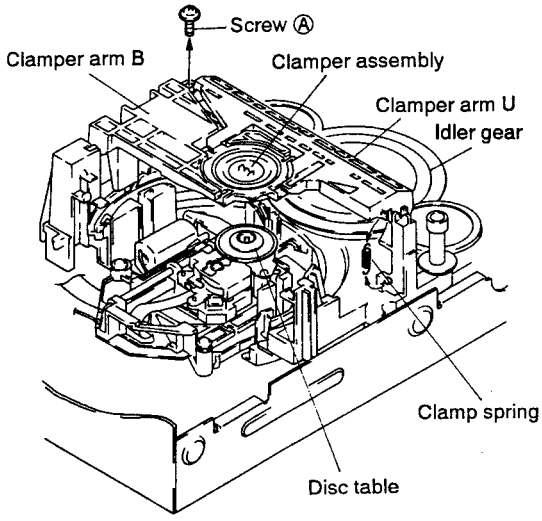

Fig. 1–4

1.4 REMOVAL OF SERVO MECHANISM ASSEMBLY

(1) Remove the tray I. (Refer to 1.1, REMOVAL OF TRAY I)
(2) Remove the tray II. (Refer to 1.2, REMOVAL OF TRAY II)
(3) Remove the clamper arm U and B. (Refer to 1.3, REMOVAL OF CLAMPER ARM U AND B)
(4) Remove four screws holding the servo mechanism assembly.

Note: As shown in Fig. 1–5, lead wires from the servo mechanism assembly are fixed by two hooks and a binder on the back of the twin tray mechanism section.

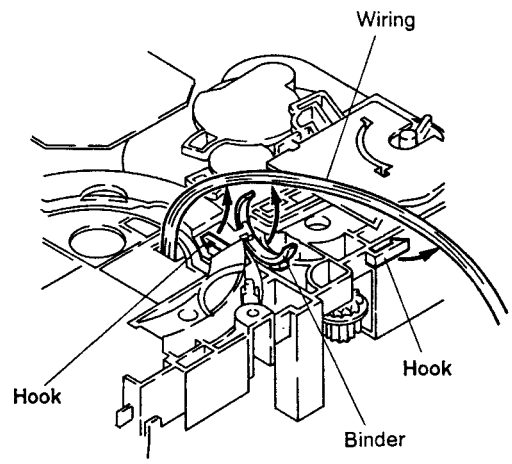

Fig. 1–5

1.5 REMOVAL OF LOADING BELT AND LOADING MOTOR

(1) Remove the tray I. (Refer to 1.1, REMOVAL OF TRAY I)
(2) Set the tray II to the OPEN position. (Refer to 1.2, REMOVAL OF TRAY II (1))
(3) Remove the belt and two screws Ⓑ, shown in Fig. 1–6.

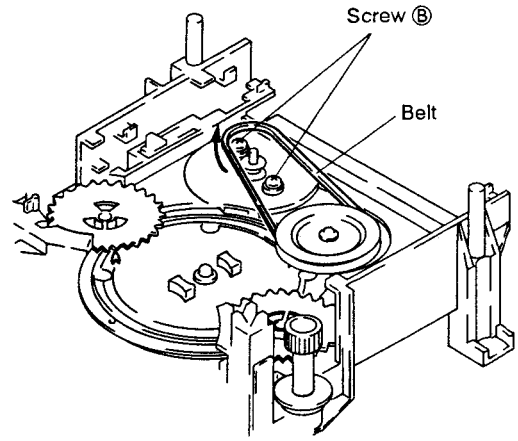

Fig. 1–6

(4) Set the tray II to the Close position.
(5) Remove screws holding the twin tray mechanism, and take out the twin tray mechanism from the body.
(6) Turn over the twin tray mechanism to set the position as shown in Fig. 1–7.
(7) Remove a screw Ⓒ holding the mechanism PCB assembly.
(8) Hold the A section of the mechanism PCB assembly and lift it up to the direction of the arrow, and remove the loading motor accompanied with the mechanism PCB assembly.

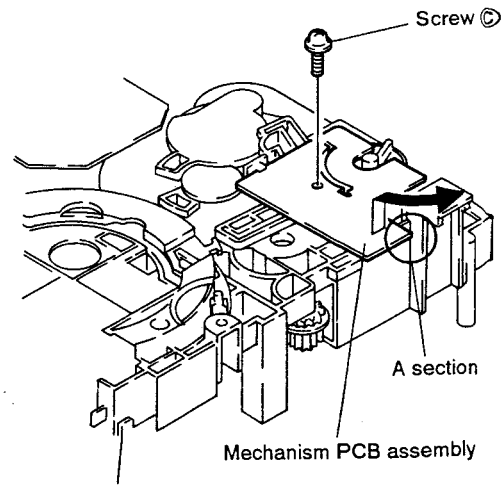

Fig. 1–7

2. REASSEMBLY

2.1 ASSEMBLY OF CLAMPER CAM AND FLOATING BASE

(1) As shown in Fig. 2–1, adjust the notches (3 points) in the clamper cam to the claws (3 points) of the loading base, and set the clamper cam to the position as the arrow shows.

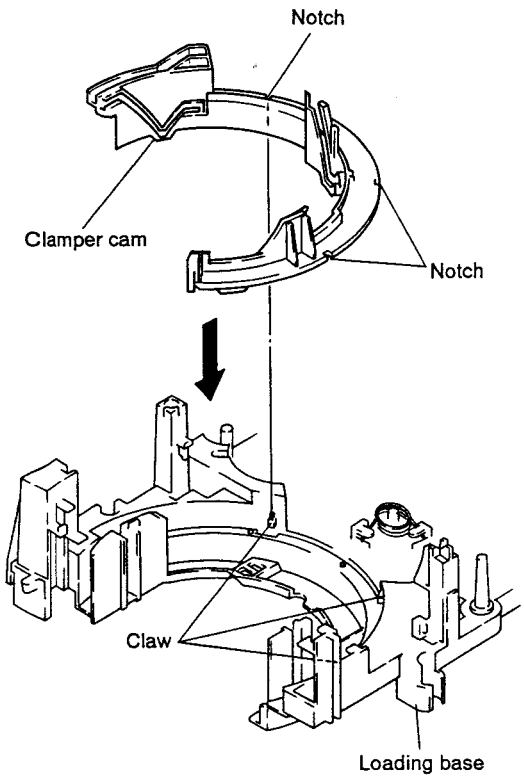

Fig. 2–1

(2) After adjusting the notches in the clamper cam to the claws (3 points) showing in Fig. 2–1, place the protrusions of the floating base on the grooves (2 points) of loading base as the arrow shows in Fig. 2–2.

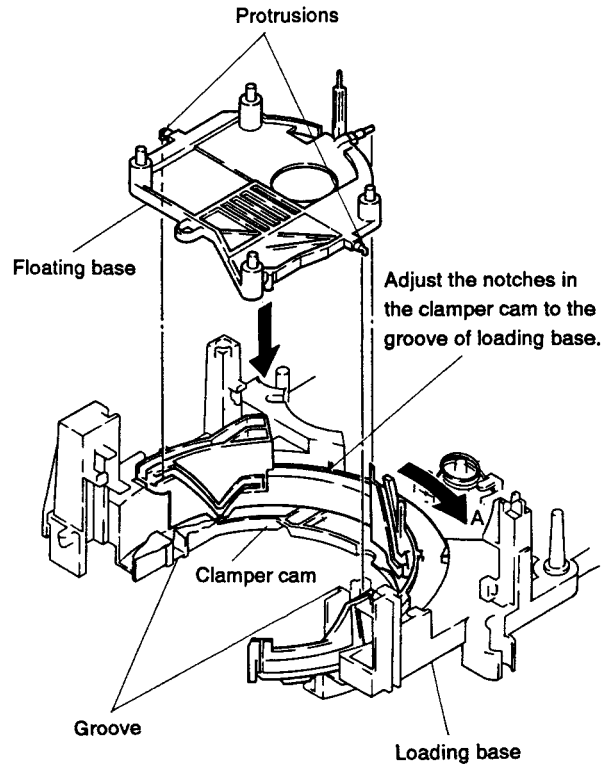

Fig. 2–2

(3) Rotate the clamper cam in the direction of the arrow A, and stop the rotation when the floating base reaches to the lowest position.

Note: Keep the floating base to the lowest position till the assembling of the main cam, follow gear, gear I, gear II, clamper arm U and B is completed.

2.2 ASSEMBLY OF MAIN CAM, FOLLOW GEAR, GEAR I, GEAR II AND GEAR PULLEY

(1) As shown in Fig. 2–3, attach the main cam, trying to adjust the main cam hole A to the clamper cam protrusion. Next, hold it with screw Ⓓ.

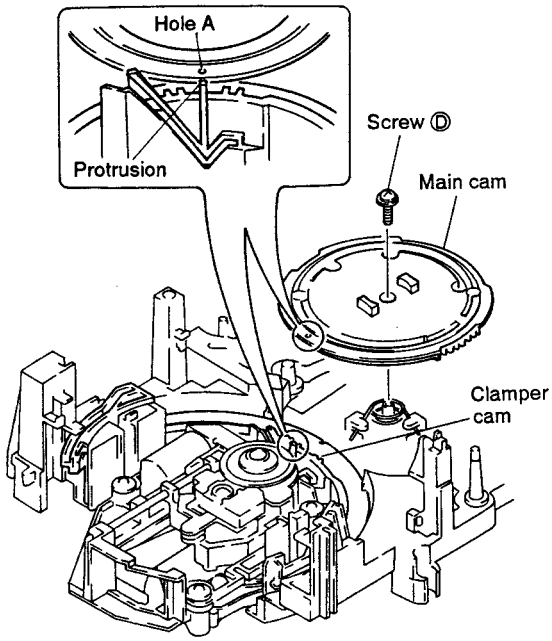

Fig. 2–3

(2) As shown in Fig. 2–4, after adjusting ♡ marks (2 points) on the main cam to the same marks on the two follow gears, insert them into the section A and B respectively.

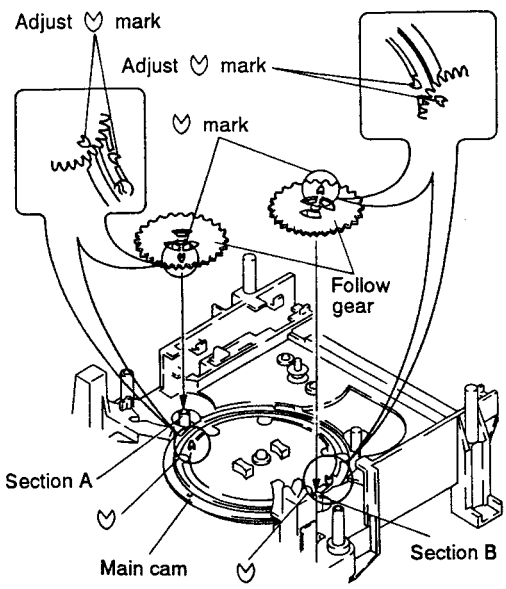

Fig. 2–4

(3) As shown in Fig. 2–5, adjust ⌂ mark on the gear I and the gear II to the hole ⌂ on follow gears, insert to positions shown in Fig., and hold them with two screws Ⓔ respectively.

(4) Insert the gear pulley to the position shown in Fig., and hold with the screw Ⓕ.

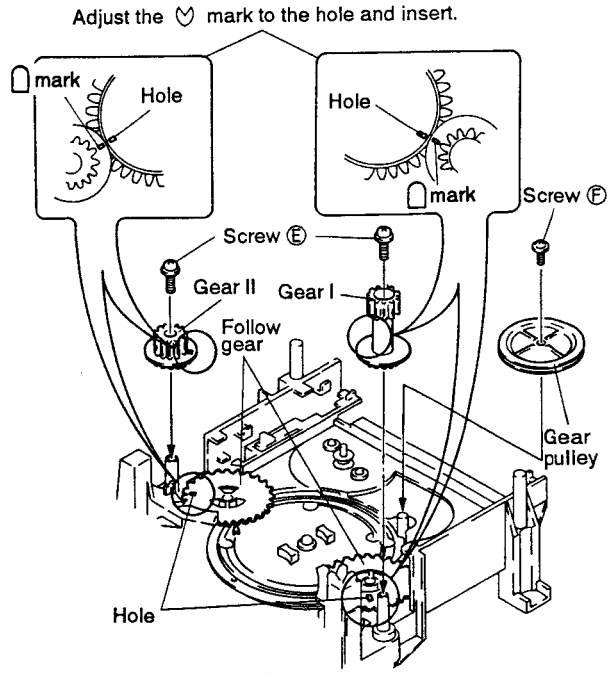

Fig. 2–5–1

(5) Finally, each gear position should be as follows.

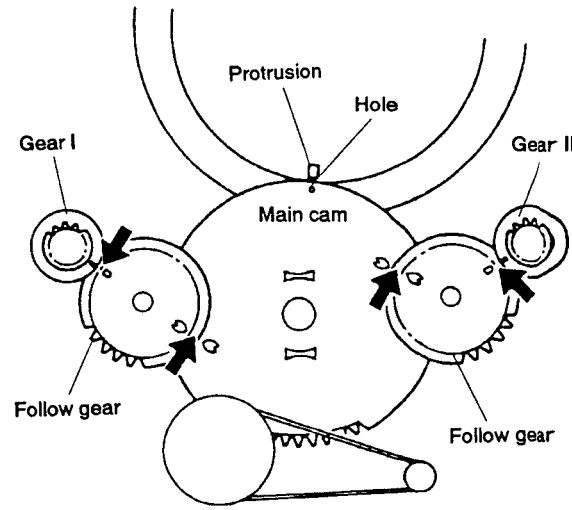

Fig. 2–5–2

2.3 ASSEMBLY OF CLAMPER ARM B, CLAMPER ARM U AND CLAMPER ASSEMBLY

(1) As shown in Fig. 2–6, insert the protrusion A of the clamper arm B into the groove of the loading base, and insert the protrusion C into the groove on the loading base, while the protrusion B being inserted into the groove on the clamper cam.

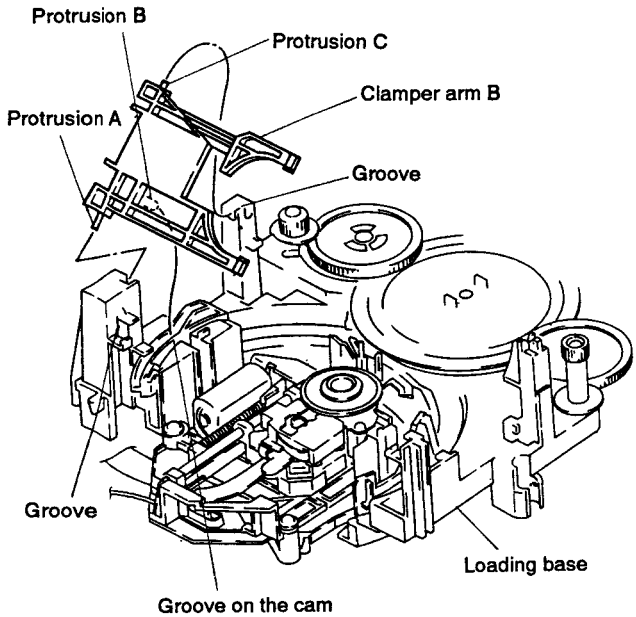

Fig. 2–6

(2) As shown in Fig. 2–7, attach the clamper assembly to the clamper arm B so that the protrusion D of the clamper assembly may turn to the position as Fig. shows.

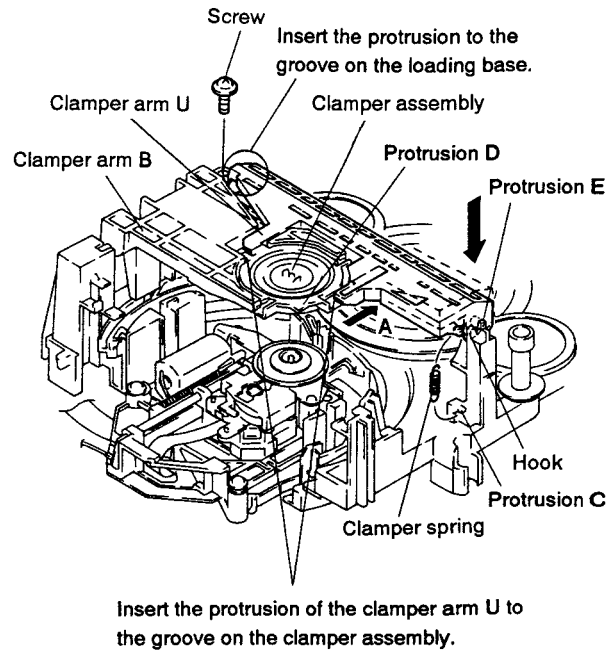

Fig. 2–7

(3) As shown in Fig. 2–7, insert the protrusion of the clamper arm U to the groove on the clamper assembly, and slide in the direction of the arrow A. Next, insert the protrusion of the clamper arm U to the groove on the loading base, while the protrusion E being pushed into the hook of the loading base.

2.4 ASSEMBLY OF LOADING MOTOR

(1) Press down the motor pulley toward the upper surface of the loading motor, keeping the space of 3 mm between the motor pulley and the upper surface of the loading motor.

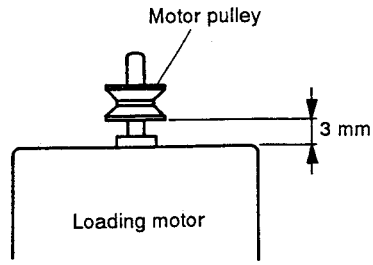

Fig. 2–8

(2) Solder the terminals of the loading motor to the mechanism PCB assembly. Since the loading motor has polarity, the positional relation between the label of the motor and the mechanism PCB assembly is shown in Fig. 2–9.

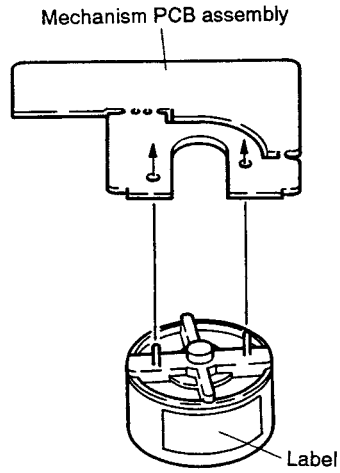

Fig. 2–9

(3) As shown in Fig. 2–10, after turning over the loading base, insert section A into the section B as the arrow shows, and fix with the screw Ⓖ.

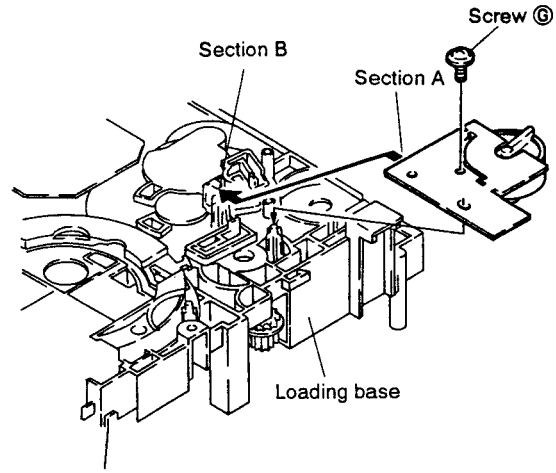

Fig. 2–10

(4) Turn over the loading base once again, and tighten the loading motor with two screws Ⓑ and set the belt as shown in Fig. 2–11.

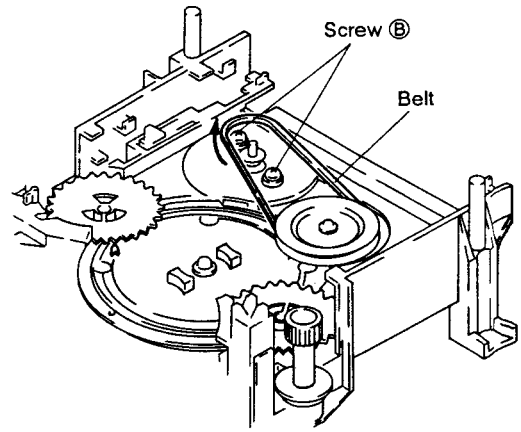

Fig. 2–11

2.5 ASSEMBLY TRAY I AND TRAY II

(1) As shown in Fig. 2–12, attach the lock lever and the lever spring to the sub tray (the two same forms), which must be placed to the left hand of the sub tray, if the sub tray is attached with the tray I, and which must be placed to the right hand of it, if it is attached with the tray II, looking from the front of the sub tray.

Note: Two lock levers are the same forms.

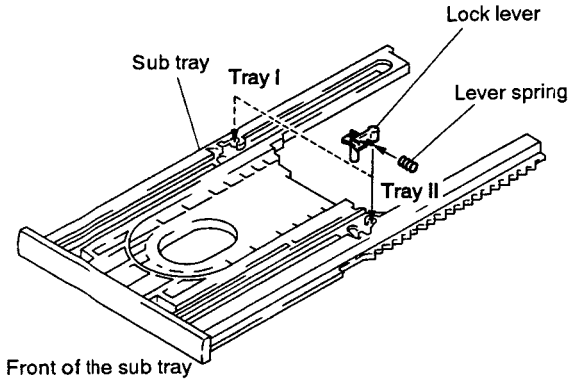

Fig. 2–12

(2) As shown in Fig. 2–13, attach the tray I or II to the sub tray by the hook applied to the section A. At that time note that the tray I has the gear on the left hand, and the tray II has the gear on the right hand. When attaching respectively, make sure the position where the lock lever attached.

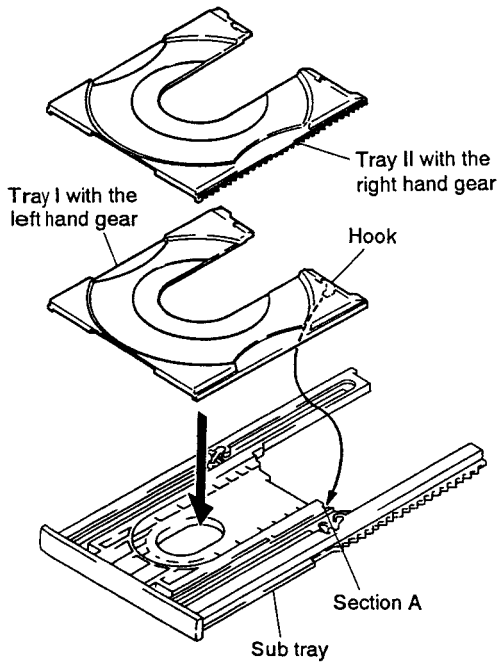

Fig. 2–13

(3) As shown in Fig. 2–14, turn over the tray, and put three screws Ⓗ on it.

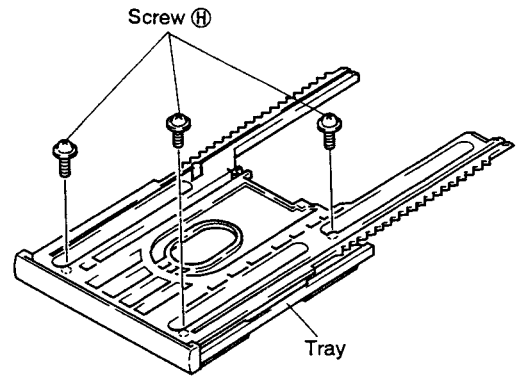

Fig. 2–14

2.6 ATTACHMENT OF TRAY II

(1) Press the OPEN/CLOSE button to make the tray I is in clamp condition, and the tray II is in open condition.

Note 1: When opening the tray II manually, insert a finger into the groove shown in Fig. 2–15, and fully rotate the idler gear counterclockwise. (As for the idler gear, refer to Fig. 1–1)

Note 2: Tray I should be attached after tray II's attachment has been completed.

(2) As shown in Fig. 2–15, adjust the □ mark on the gear II to the first tooth of the tray II, then push in the tray II slowly.

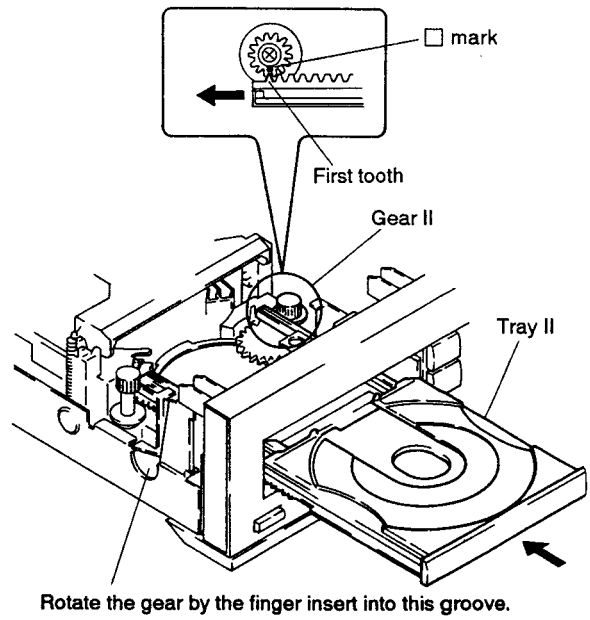

Fig. 2–15

2.7 ATTACHMENT OF TRAY I

(1) Press the OPEN/CLOSE button to make the disc II is in clamp condition, and the tray I is in open condition.

Note: When opening the tray I manually, insert a finger into the groove shown in Fig. 2–15, and rotate the idler gear clockwise, and tray II is clamped.
Further, rotate the idler gear, the pin pressing the switch appears at B position.When the pin moves to A position, stop the gear rotation. The gear I reaches to a position shown in the figure. At this position, attach the tray I.

(2) As shown in Fig. 2–16, adjust the first tooth of the tray I to the clogged part of the gear I, then push in the tray I slowly.

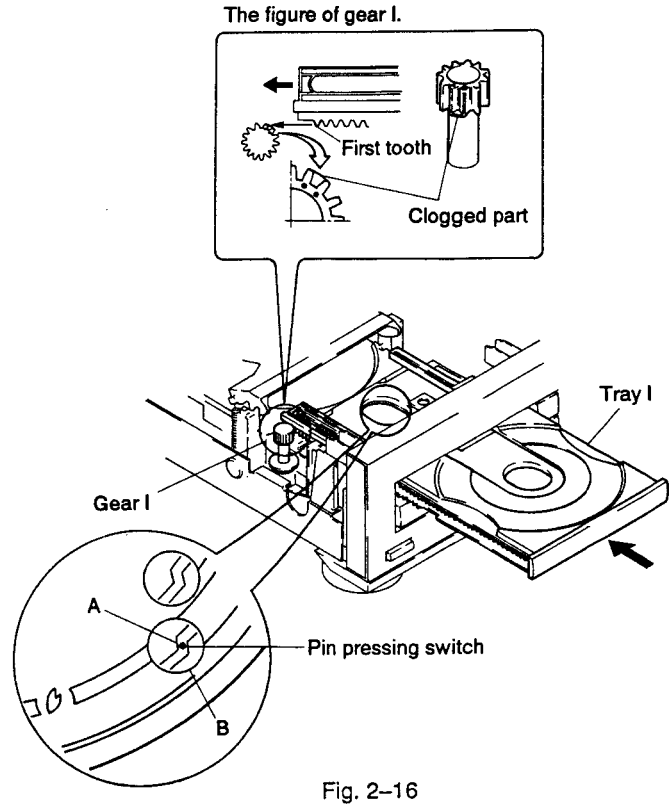

Fig. 2–16

2.8 STYLING

(1) Bend the wires as shown in Fig. 2–17.

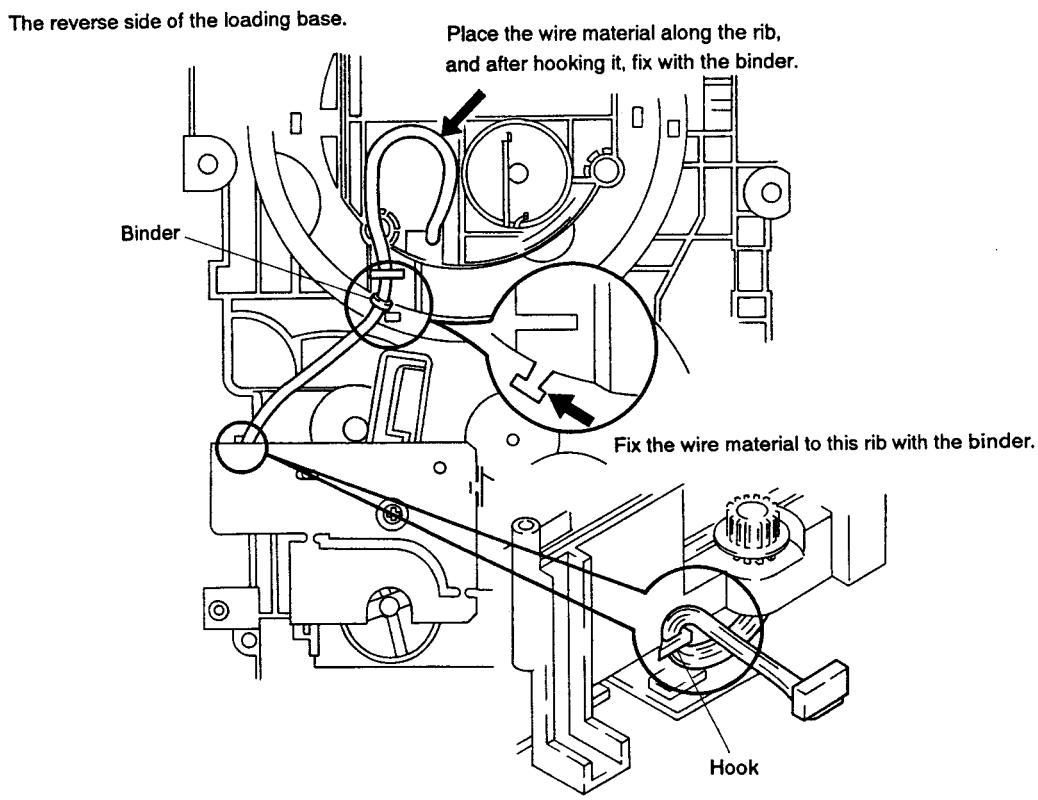
The reverse side of the loading base.
Place the wire material along the rib, and after hooking it, fix with the binder.
Binder
Fix the wire material to this rib with the binder.
Hook

Fig. 2–17

3. OPERATION OUTLINE

3.1 CHARACTERISTICS

The twin-tray mechanism of this unit is characterized by two basic features.
The first one is that both trays are driven by only one loading motor like in conventional single-tray system. This is a continuation of the design thought underlying the last generation twin-tray mechanism.
The second feature is the sandwiched tray design together with the utilization of a vertically moving servo mechanism for clamping, and horizontally arranged parts, resulting in a simplified construction and reducing the depth and width of the mechanism. As a result, the dimensions of the tray mechanism are almost the same size as for conventional single-tray system.
In addition, the mechanism is suited for mini-sized (260 mm width) products.

3.2 STRUCTURE OF THE TRAY SECTION

The tray section consists of a tray and a sub tray, as shown in Fig. 3-1. The tray slides in the sub tray grooves and is secured by three screws.
The switching between tray and sub tray operation is performed via a lock lever mounted on the sub tray.

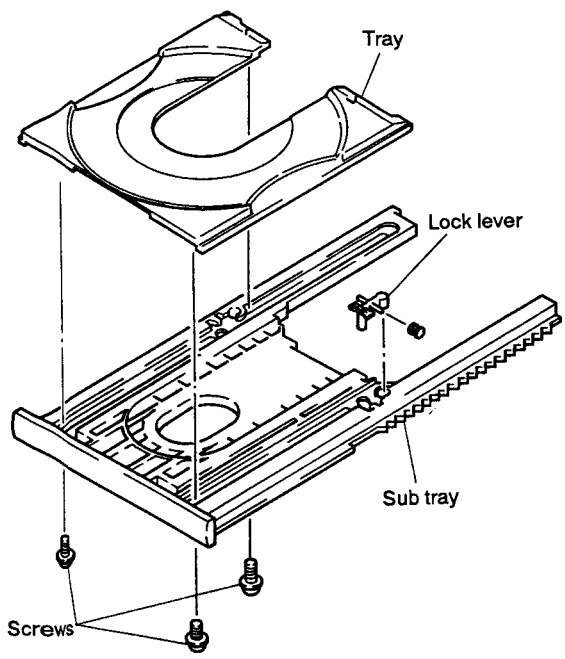

Fig. 3-1

As shown in Fig. 3-2, while the tray is opening or closing, the lock lever is held in the guide rib notch portion of the sub tray by the force of the lever spring, so that tray and sub tray move as one unit.

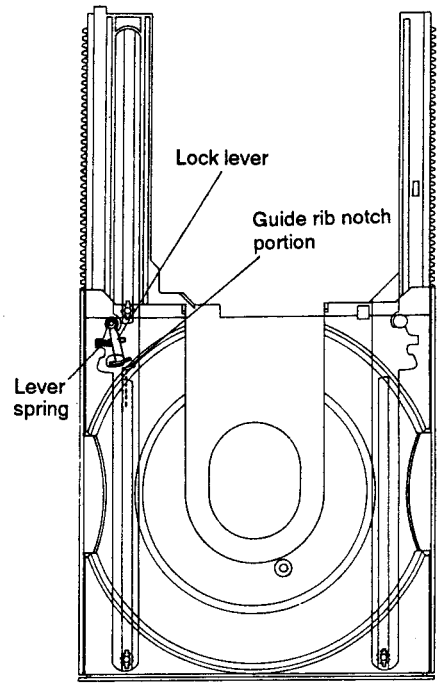

Fig. 3-2

When the tray is closed, the lock lever is disengaged from the guide rib notch of the sub tray by way of the guide groove in the loading base, and the interlocking between tray and sub tray is released.

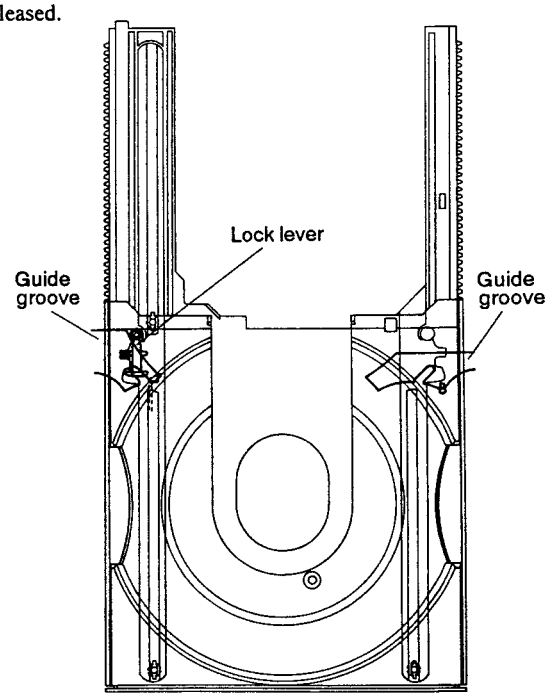

Fig. 3-3

When CHANGE or PLAY button is depressed, only the tray moves on the sub tray, as shown in Fig. 3–4. The driving gear for tray I is located on the left side of the tray and the lock lever is mounted on the left side of the sub tray. The driving gear and the lock lever for tray II are located on the right side.

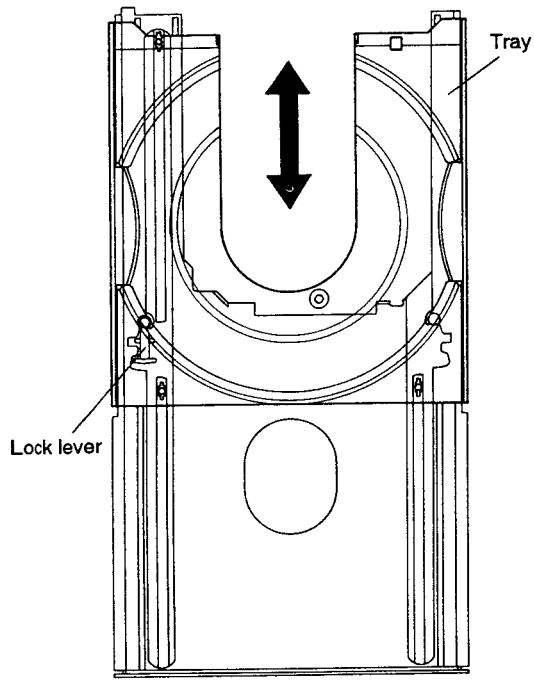

Fig. 3–4

3.3 POWER TRANSMISSION FROM THE LOADING MOTOR

As shown in Fig. 3–5, the rotation of the loading motor is transmitted to the main gear via a rubber belt, gear pulley, and idler gear.

The follow gears located on both side of the main gear are synchronized with the rotation of the main gear and rotate gear I and gear II respectively. Gears I and II drive the two trays.

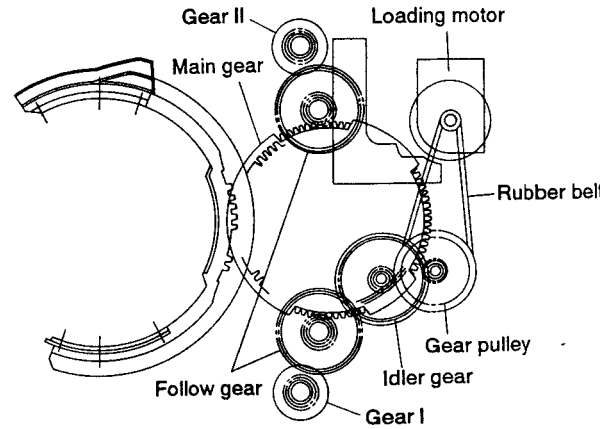

Fig. 3–5

As shown in Fig. 3–6, the drive power of the tray is transmitted by gears I and II to the gear section on the side of the sub tray and the tray. When the OPEN button is depressed, only the sub tray side is engaged, changing over to the tray side half–way between tray OPEN position and tray CLOSE position and then driving only the tray side to perform operation switching by the lock lever.

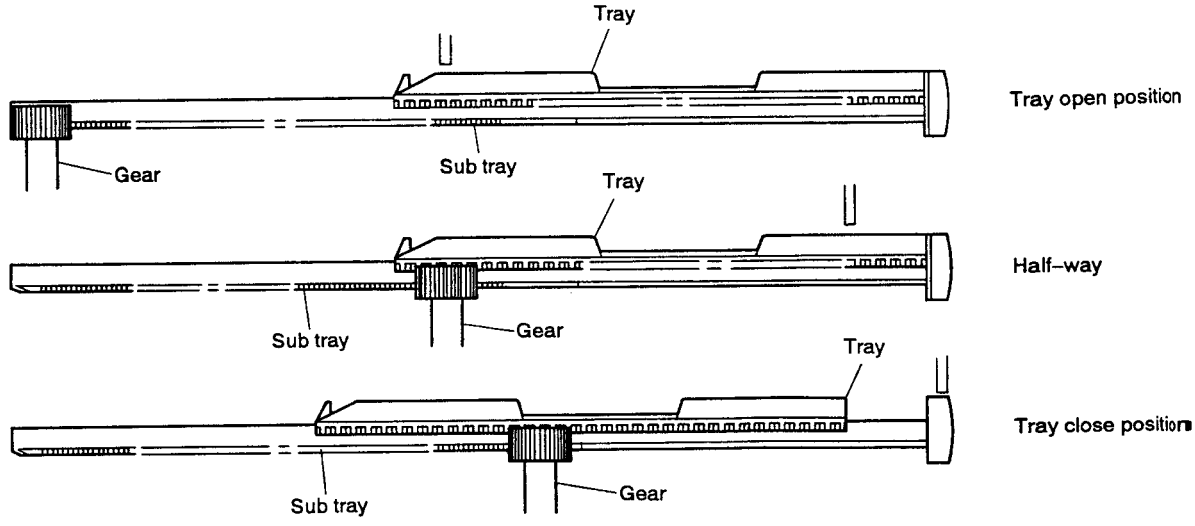

Fig. 3–6

The clamp cam, as shown in Fig. 3–7, rotates in synchronization with the main cam rotation to move the float base vertically. The cam groove of the clamp cam drives clamper arm B which, together with clamper arm U and the clamper holder, moves the clamper assembly up and down. (Refer to Fig. 1–4)

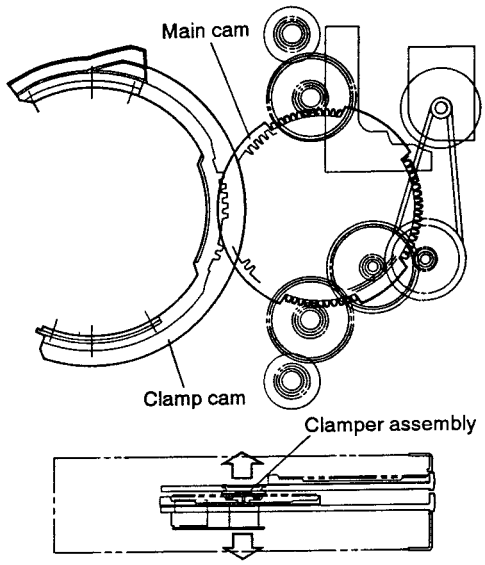

Fig. 3–7

3.4 TRAY POSITION DETECTION

The mechanism for tray position detection is shown in Fig. 3–8. The tray position is detected by the tips of three plastic springs, which are located on the loading base to follow the change of diameter in two grooves on the rear side of the main cam, and the ON/OFF condition of three switches located on the mechanism board.

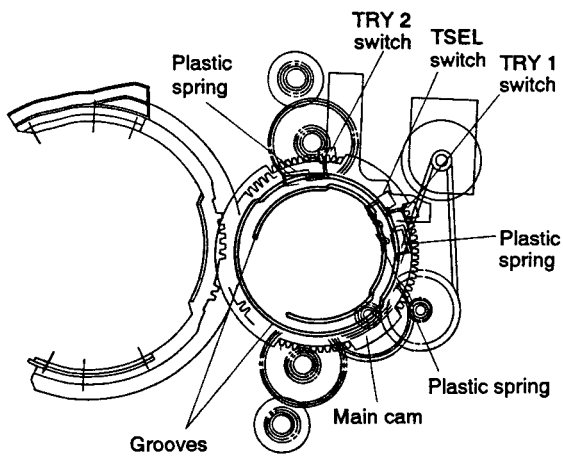

Fig. 3–8

3.5 MAIN CAM OPERATION

The main cam performs switching between operations.

(1) OPEN/CLOSE Operation

The two follow gears are located on the left and the right side of the main cam respectively. The left follow gear drives tray I via gear I and the right follow gear drives tray II via gear II.

As shown in Fig. 3–9, when tray I is in OPEN position, the left follow gear is engaged with the main cam gear. The non–toothed sections of the right follow gear and the main cam face each other, and the follow gear does not rotate. Therefore, when the motor rotates to tray I CLOSE direction (main cam rotates counterclockwise), only the left follow gear is driven to tray I to CLOSE direction. At this time, tray II is in the PLAY position.

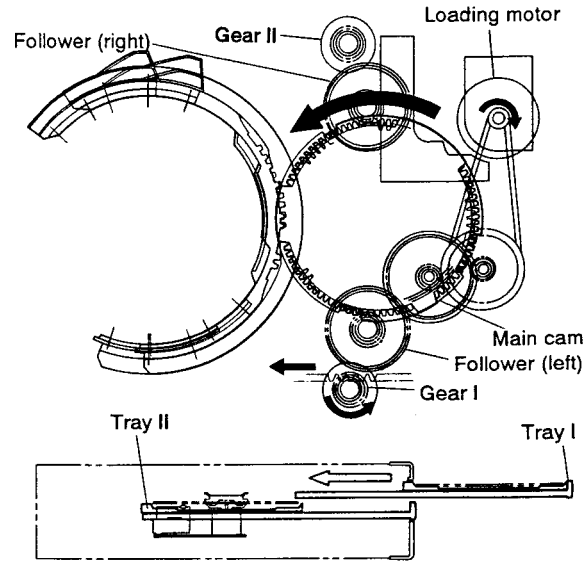

Fig. 3–9

		TRAY1	TRAY2	TRY1 switch	TSEL switch	TRY2 switch	Remarks
MECHANISM POSITION	①	OPEN	PLAY	L	H	L	When tray 2 is in play position, indicates that tray 1 has arrived in open position from close position.
	②	OPEN/ CLOSE	PLAY	H	H	L	When tray 2 is in play position, indicates that tray 1 is between close position and open position.
	③	CLOSE	PLAY	H	L	L	When tray 2 is in play position, indicates that tray 1 is at close position.
	④	CHANGE	CHANGE	H	L	H	When there is transition from ⑥ to ⑤, indicates that there is movement in progress with tray 1 to play position and tray 2 to close position.
	⑤	CHANGE	CHANGE	H	H	H	When there is transition from ⑤ to ④, indicates that there is movement in progress with tray 1 to close position and tray 2 to play position.
	⑥	PLAY	CLOSE	L	H	H	Indicates that tray 1 is in play position and tray 2 in close position.
	⑦	PLAY	OPEN/ CLOSE	L	L	H	When tray 1 is in play position, indicates that tray 2 is between close position and open position.
	⑧	PLAY	OPEN	L	L	L	When tray 1 is in play position, indicates that tray 2 has arrived in open position.

As shown in Fig. 3–10, when tray I is in CLOSE position, the non–toothed sections of the main cam and the left follow gear face each other, so that the follow gear does not rotate. At this time, the right follow gear is still positioned at the non–toothed section of the main cam so that tray II remains in PLAY position. OPEN/CLOSE operation of tray II is performed by reversing the above operation.

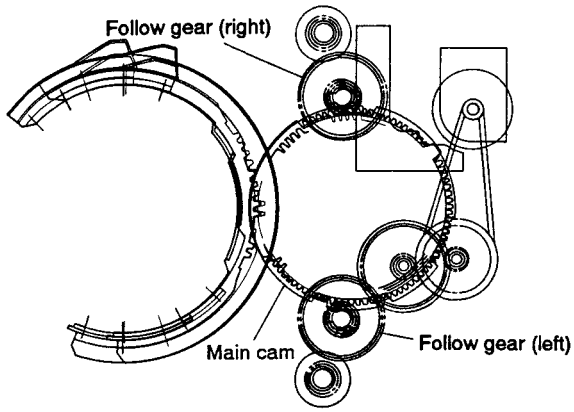

Fig. 3–10

(2) DISC Change Operation

As shown in Fig. 3–11, when tray I is in CLOSE position and tray II is in PLAY position, the follow gears (right and left) do not rotate as described above. At this time, the single tooth of the main cam and the 2–tooth of the clamp cam will be engaged and the clamp cam starts to rotate.

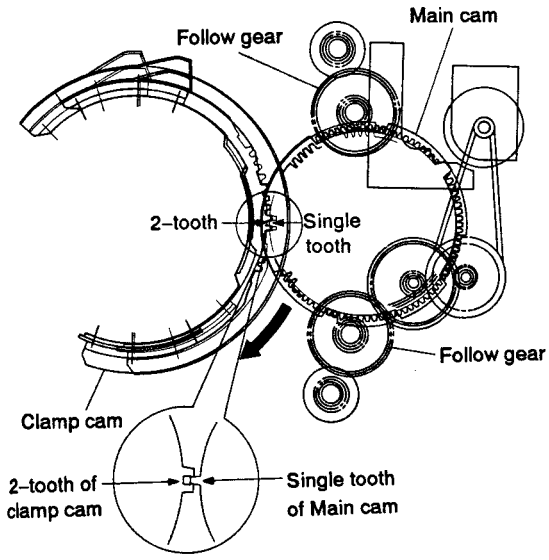

Fig. 3–11

When the main cam rotates counterclockwise as shown in Fig. 3–12, the clamp cam also rotates synchronously. The float base supported by the loading base guide moves down along the three V–shaped cams of the clamp cam. At the same time, the clamper arm moves along the groove on the right side of the clamp cam to raise the clamper assembly. By this operation the DISC clamp is released.

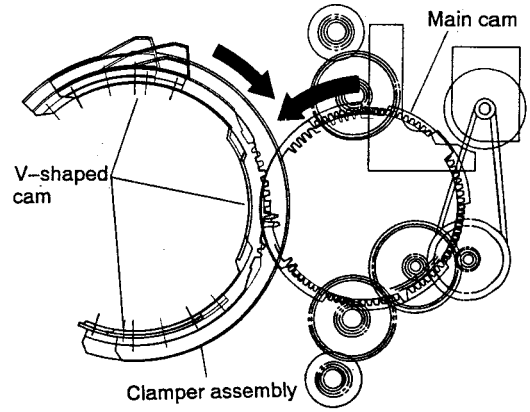

Fig. 3–12

When the main cam rotates further as shown in Fig. 3–13, the float base moves to the valley of the V–shaped cam and the gear section of the main cam and the follow gears are engaged. The follow gears (right and left) simultaneously rotate in clockwise direction. Driven by the follow gears, gears I and II rotate and simultaneously move tray I from the CLOSE position to the PLAY position and tray II from the PLAY position to the CLOSE position.

By this operation the DISC is changed. At this time, the non–toothed sections of the clamp cam and the main cam face each other so that the cams do not rotate.

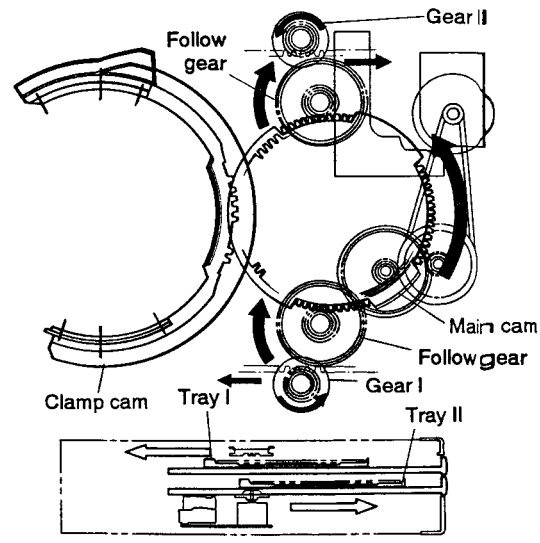

Fig. 3–13

As shown in Fig. 3–14, the second level gear of the main cam and the clamp cam gear engage just before the movements of tray I and tray II are completed, and the clamp cam starts to rotate again. The right and left follow gears face the non–toothed sections of the main cam, and at the same time the rotation stops.

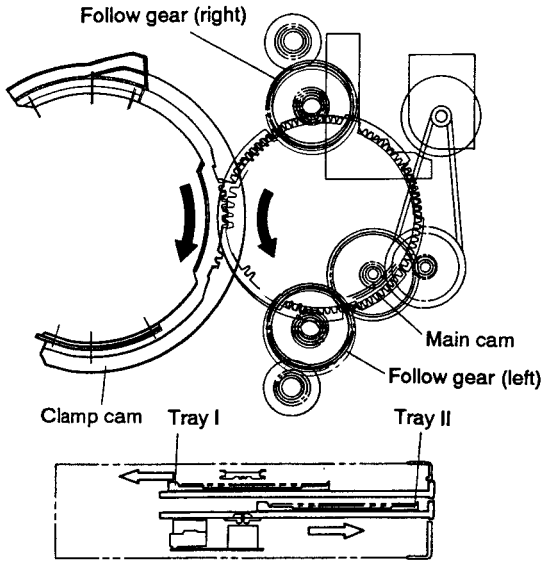

Fig. 3–14